### River des Peres Whole Body Contact Recreation Use Attainability Analysis

July 2005

# Prepared for: METROPOLITAN ST. LOUIS SEWER DISTRICT

2350 Market Street St. Louis, Missouri 63103

Prepared by:
MEC WATER RESOURCES, INC.
1000 North College Avenue, Suite 4
Columbia, Missouri 65201

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#### I. INTRODUCTION

In September 2000, U.S. Environmental Protection Agency Region VII (EPA) notified the Missouri Department of Natural Resources (MDNR) that several items contained within Missouri's Water Quality Standards were inconsistent with the intent of the Federal Clean Water Act of 1972 (CWA). EPA noted that MDNR's limited designation of streams for swimming uses was inconsistent with the CWA. Section 101(a)(2) of the CWA establishes as a national goal "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water," wherever attainable. This goal presumes that all waters should be suitable for fishing and swimming unless these uses are unattainable per Title 40 Code of Federal Regulations (CFR) Section 131.10. The MDNR currently designates only 10% of Missouri's classified waters as having Whole Body Contact Recreation (WBCR) uses (swimming).

In response to concerns raised by EPA, MDNR is proposing WBCR use designation of all classified waters listed in State regulations. However as allowed by Federal regulations, a Use Attainability Analysis (UAA) may be conducted to determine if WBCR use is an appropriate and attainable use for a specific waterbody.

A UAA is a structured scientific assessment of the factors affecting use attainment, which may include physical, chemical, biological, and economic factors. If a designated use is not an existing use attained on or after November 28, 1975, one of the following attainability factors must justify the removal or downgrading of a designated use (from 40 CFR 131.10(g)):

- (1) Naturally occurring pollutant concentrations prevent the attainment of the use;
- (2) Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for with sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met;
- (3) Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place;
- (4) Dams, diversions, or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the waterbody to its original condition or to operate such modifications in a way that would result in the attainment of the use;
- (5) Physical conditions related to the natural features of the water body, such as lack of proper substrate, cover, flow, depth, pools, riffles, and the like unrelated to water quality, preclude attainment of aquatic life protection uses; or
- (6) Controls more stringent than those required by Title III Sections 301 and 306 of the CWA would result in substantial and widespread economic and social impact.

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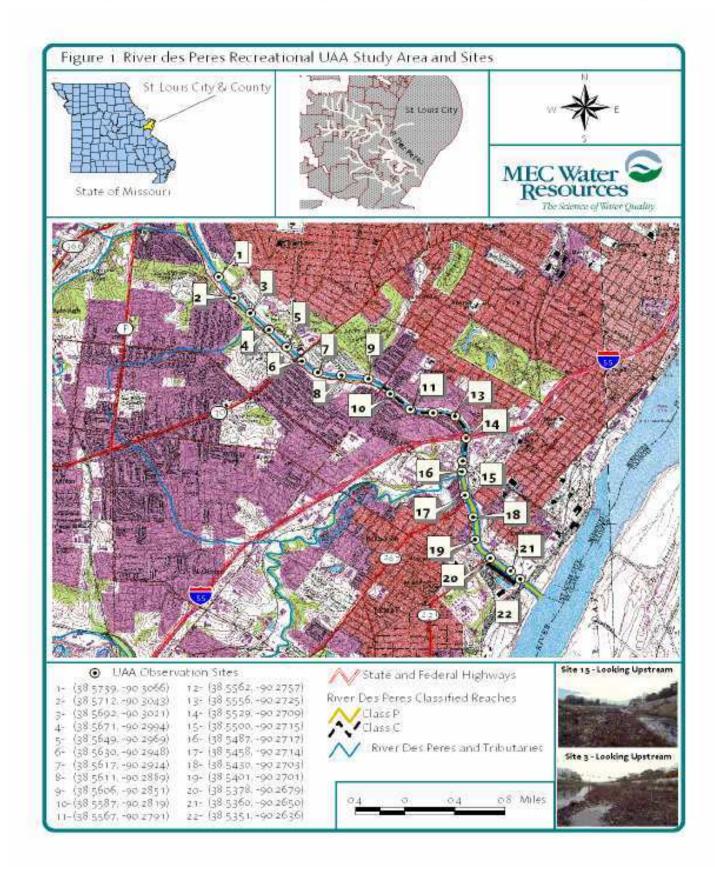
Whole Body Contact Recreation Use Attainability Analysis

MDNR, in cooperation with State, Federal, Municipal, and private entities, developed a recreational UAA protocol for Missouri waters (MDNR 2004). This recreational UAA framework addresses use attainability factors that may allow removal or downgrading of WBCR uses for specified water body segments. Missouri WBCR UAAs may include, but are not limited to: field observations of swimming areas, sampling for pathogenic indicator bacteria, and interviews of nearby residents to determine historic recreational use.

The Metropolitan St. Louis Sewer District (MSD) is interested in determining whether or not WBCR is an existing or attainable use for River des Peres. Ongoing combined sewer overflow (CSO) control planning efforts must be founded on realistic and achievable goals for area receiving waters. MSD is concerned about potentially expending excessive public finalncial resources in pursuit of a WBCR goal if it is not attainable. To address these concerns, River des Peres, a classified tributary to the Mississippi River receiving urban runoff and CSO discharges, was evaluated for existing, potential, and attainable WBCR uses. Field surveys were conducted in October 2004. The assessment described herein is expected to meet or exceed the requirements set forth by MDNR in available UAA protocols for evaluating recreational uses.

#### II. STUDY AREA

The 1.0 mile segment of River des Peres (Figure 1) upstream of the Mississippi River is a Class "P" Water of the State while an additional 1.5 miles further upstream is classified as Class "C" (Blunt 2004). Beneficial uses currently designated for River des Peres include: Protection of Warm-Water Aquatic Life, Livestock and Wildlife Watering, and Human Health Protection (Fish Consumption and Secondary Contact Recreation). Draining an urbanized watershed in southern St. Louis County and a large section of St. Louis City, land uses of River des Peres are 64% residential, 11% institutional, 7% commercial, 6% industrial, 5% vacant, 3% recreational, and 3% public (SSPC 2002). Overall, the River des Peres watershed is composed of approximately 34% impervious area (SSPC 2002). The River des Peres watershed is contained within the larger Cahokia-Joachim catchment (8-digit HUC 07140101) and State-assigned waterbody identification numbers are 1710 and 1711 for the Class P and C segments, respectively.



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#### **III. METHODS AND MATERIALS**

Procedures developed by MDNR for conducting WBCR UAAs were the primary reference for this study (MDNR 2004). In summary, MDNR UAA procedures contain the minimum elements listed below:

- Surveys should generally be conducted during the regulatory recreational season (April 1 to October 31);
- Surveys should be conducted during baseflow conditions;
- Recreational assessments should be performed at a minimum of three publicly accessible sites along the stream reach of interest;
- All sites shall be marked on a 1:24,000 U.S. Geological Survey (USGS) topographic map;
- A photographic record should be prepared for each site that includes upstream and downstream views, in addition to any evidence of observed or potential recreational uses; and
- Interviews of persons present during the time of survey and nearby-residents.

In addition to MDNR site characterization requirements, MEC Water Resources, Inc. (MEC) staff collected systematic stream hydrogeometry and riparian corridor information at twenty-two evenly spaced sites along classified reaches of River des Peres (Figure 1). During the surveys MEC interviewed nearby residents, employees, Missouri Stream Team representatives, members of the River des Peres Watershed Coalition, and individuals observed near River des Peres for information regarding personal, observed, and anecdotal recreational uses of River des Peres.

#### IV. RESULTS AND DISCUSSION

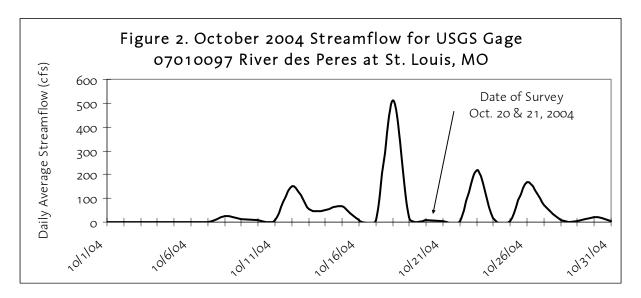
The following discussion is provided to aid decision-makers in evaluating appropriate recreational uses for River des Peres. Although summarized in the following paragraphs, raw data collected during the survey are contained in Appendix A along with field data sheets (Data Sheets A and B') and photographs required by MDNR UAA protocols

#### A. Environmental Conditions

Twenty-two sites along a 4.5 mile section of River des Peres (Figure 1) were surveyed on October 20, and 21, 2004 using methods referenced and described in Section III. Surveys were conducted during baseflow conditions as evidenced by streamflow data from USGS gage station River des Peres at St. Louis, MO (Figure 2). Average streamflows at the St. Louis gage were 6.8 and 5.0 cubic feet per second (cfs) on October 20 and 21, 2004, respectively. An instantaneous open channel flow measurement taken by MEC staff on October 21 at Site #1 (4.9 cfs) agrees with the USGS daily average estimate. A higher measurement (5.3 cfs) taken downstream of the gage on October 21, near the confluence of Gravois Creek, could be attributed to higher antecedent flows reaching downstream segments. Flow conditions observed during the study would not have precluded or limited recreational usage. Lateral transect depth measurements are provided in Appendix B.

Field surveys were conducted during the recreational season, as recommended by MDNR protocol. Weather conditions during the survey were stable, with mean daily air temperatures of 54°F and 58°F on October 20 and 21, respectively. Cooler temperatures may have limited

the appeal of recreational activities within River des Peres to an unknown extent. However, results from interviews are expected to reveal any recreational usage that may not have been directly observed by MEC staff during field surveys.



#### B. Site Characterizations

Twenty-two sites along a 4.5 mile segment of River des Peres were assessed for existing, potential, and attainable recreational uses. All sites are located near the southern boundary of the City of St. Louis. Photographs taken during the survey are included in Appendix A.

#### 1. Unclassified Reaches (Sites #1 - #9)

Landscapes near unclassified reaches of River des Peres are primarily urban residential and commercial/industrial. City parks, walkways, and fencing intermittently border riparian areas adjacent to the River des Peres stream channel (Table 1). Steep streambanks are sparsely vegetated and lined with concrete. The streambed is lined with rip-rap.

Baseflows are transported in small subchannels within the larger trapezoidal channel. Mean depth from nine representative transects was 0.6 ft. while the maximum observed depth was 2.1 feet at Site #1 (Table 2). Channel substrate is a mixture of cobble, gravel, sand, and concrete with localized deposits of fine sediment. Waters were clear to slightly gray in color.

The presence of roads, all terrain vehicle (ATV) and equipment tracks, and discharge structures were the only signs of human activity within unclassified reaches of River des Peres. MSD contractors routinely utilize ATVs to perform various services, likely resulting in the observed ATV tracks. The observed equipment tracks were made by tracked equipment presumably used for channel maintenance. MEC staff did not directly observe recreational uses in or along these stream segments during the October surveys.

Table 1. Surrounding Conditions, Observed Uses, and Stream Attributes for Unclassified Segments of River des Peres (Sites #1-#9)

	segments of River des Feres (Sites # 1 #9)						
	Surrounding Conditions	Observed Uses	Signs of Human Activity	Channel Substrate	Bank Condition		
Site #1	City Park, Steep Slopes, Urban Areas, Walkway	None	Roads, Discharge Structure	Cobble, gravel, sand,mud	Concrete Lined Banks, Rip-Rap Bed		
Site #2	City Park, Steep Slopes, Urban Area, Walkway	None	Roads, ATV Tracks, Discharge Structure	Cobble, gravel, sand, concrete	Concrete Lined Banks, Rip-Rap Bed		
Site #3	City Park, Steep Slopes, Urban Area, Fencing	None	Service Roads, Bulldozer Tracks, Discharge Structure	Cobble, gravel, sand, concrete	Concrete Lined Banks, Rip-Rap Bed		
Site #4	City Park, Steep Slopes, Urban Area, Fencing	None	Service Roads, ATV Tracks, Discharge Structure	Cobble, gravel, sand, mud, concrete	Concrete Lined Banks, Rip-Rap Bed		
Site #5	City Park, Steep Slopes, Urban Area, Cemetary	None	Service Roads, ATV Tracks, Discharge Pipes	Cobble, gravel, sand, concrete	Concrete Lined Banks, Rip-Rap Bed		
Site #6	Steep Slopes, Urban Area	None	Roads, ATV Tracks, Discharge Structure	Cobble, gravel, sand, concrete	Concrete Lined Banks, Rip-Rap Bed, Willows		
Site #7	City Park, Steep Slopes, Urban Area	None	Roads, ATV Tracks, Discharge Structure	Cobble, gravel, sand, concrete	Concrete Lined Banks, Rip-Rap Bed, Willows		
Site #8	Steep Slopes, Urban Area	None	Roads, ATV Tracks, Discharge Structure	Cobble, gravel, sand, concrete	Concrete Lined Banks, Rip-Rap Bed		
Site #9	Steep Slopes, Urban Area	None	Service Roads, Discharge Structure	Cobble, gravel, sand, concrete	Concrete Lined Banks, Rip-Rap Bed		

Table 2. River des Peres Transect Depth Summary for Unclassified Reaches (Sites #1-#9)

Transect (#)	Mean Depth (ft.)	Maximum Depth (ft.)
Site #1	0.71	2.05
Site #2	0.78	1.10
Site #3	0.49	0.80
Site #4	0.38	0.72
Site #5	0.49	1.00
Site #6	0.45	0.85
Site #7	0.45	1.00
Site #8	0.62	1.20
Site #9	0.69	2.00
Unclassified Reach	0.56	2.05

#### 2. Intermittently Flowing Reaches - Class C (Sites #10 - #16)

Landscapes near the intermittent, Class C reaches of River des Peres are primarily urban residential with localized industrial areas at Site#16. City parks, walkways, and fencing were absent along riparian areas adjacent to the River des Peres stream channel (Table 3). Steep streambanks are sparsely vegetated and lined with concrete. The stream bed is lined with riprap.

Baseflows are transported in small subchannels within the larger trapezoidal channel. The mean water depth from seven representative transects was 0.8 ft. while the maximum observed depth was 1.9 feet at Site #14 (Table 4). Although not representative of the assessment reach, a localized pool with water depths too deep to measure (>3 feet) was observed near Site #15. This pool is a result of scour from wet weather discharges and should be mitigated by MSD with ongoing channel maintenance efforts to prevent further scouring and stream instability. Channel substrate within these stream reaches is a mixture of cobble, gravel, sand, and concrete with localized deposits of fine sediment. Waters were observed clear to slightly gray in color.

The presence of roads, pull-offs, ATV tracks, and discharge structures were the only signs of human activity within Class C reaches of River des Peres. MSD contractors routinely utilize ATVs to perform various services, likely resulting in the observed ATV tracks. MEC staff did not directly observe recreational uses of these stream segments during the October surveys.

Table 3. Surrounding Conditions, Observed Uses, and Stream Attributes for Class C Segments of River des Peres (Sites #10-#16)

	Surrounding Conditions	Observed Uses	Signs of Human Activity	Channel Substrate	Bank Condition
Site #10	Urban Areas	None	Roads, Discharge Structures, Service Roads	Cobble, gravel, sand	Some vegetation, concrete banks and rip-rap bed
Site #11	Steep Slopes, Urban Areas	None	Roads, ATV tracks, Discharge Structures	Cobble, gravel, sand	Some vegetation, concrete banks and rip-rap bed
Site #12	Steep Slopes, Urban Areas	None	Roads, Discharge Structures	Sand, gravel, cobble	Some vegetation, concrete banks and rip-rap bed
Site #13	Steep Slopes, Urban Areas	None	ATV tracks, Discharge Structures	Concrete, cobble, gravel, sand	Some vegetation, concrete banks and rip-rap bed
Site #14	Steep Slopes, Urban Areas, Walkway next to Interstate Highway	None	Roads, ATV tracks, Discharge Structures	Gravel, cobble, sand, concrete, mud	Some vegetation, concrete banks and rip-rap bed
Site #15	Steep Slopes, Urban Areas	None	Roads, ATV tracks, Discharge Structures	Gravel, sand, cobble	Some vegetation, concrete banks and rip-rap bed
Site #16	Urban/Industrial Area	None	Roads, Discharge Structures	Cobble, gravel, sand	Some vegetation, concrete banks and rip-rap bed

### Table 4. River des Peres Transect Depth Summary for Class C Reaches (Sites #10-#16)

Transect (#)	Mean Depth (ft.)	Maximum Depth (ft.)
Site #10	0.66	1.00
Site #11	0.73	1.08
Site #12	0.81	1.10
Site #13	0.99	1.50
Site #14	1.37	1.90
Site #15	0.59	1.00
Site #16	0.40	0.62
Class C Reach	0.79	1.90

#### 3. Permanent Flowing Reaches - Class P (Sites #17 - #22)

Landscapes near the permanently flowing Class P reaches of River des Peres are primarily urban residential and industrial. Permanent flows within these reaches are provided by Gravois Creek during low flow conditions, even when the upper River des Peres segments do not yield flow. Several sections of fencing bordered riparian areas adjacent to the River des Peres stream channel (Table 5). Steep streambanks are sparsely vegetated and lined with concrete. Stream beds were lined with rip-rap.

Baseflows are transported in small subchannels within the larger trapezoidal channel. The mean water depth from five representative transects was 0.5 ft. while the maximum observed depth was 1.35 feet at Site #17 (Table 6). Channel substrate is mostly cobble and gravel with localized deposits of fine sediment near Site #17. Waters were observed to be mostly clear or slightly green in color.

MEC staff during October surveys did not observe recreational activities in these stream segments. The only sign of human activity during the survey was the presence of a land survey crew near Site #20.

Table 5. Surrounding Conditions, Observed Uses, and Stream Attributes for Class P Segments of River des Peres (Sites #17-#22)

	Surrounding Conditions	Observed Uses	Signs of Human Activity	Channel Substrate	Bank Condition
Site #17	Urban Area, Roads, Steep Slopes, Fence	None	Roads	Cobble, gravel	Some vegetation, concrete lined banks and rip-rap
Site #18	Urban Area, Steep Slopes, Fence	None	None	Cobble, gravel	Some vegetation, concrete lined banks and rip-rap
Site #19	Urban Area, Steep Slopes	None	None	Cobble, gravel	Some vegetation, concrete lined banks and rip-rap
Site #20	Urban Area, Steep Slopes, Fence	Survey Crew	None	Cobble, gravel	Some vegetation, concrete lined banks and rip-rap
Site #21	Urban/Industrial Area, Steep Slopes, Fence	None	None	Cobble, gravel	Some vegetation, concrete lined banks and rip-rap
Site #22	Urban/Industrial Area, Steep Slopes, Fence	None	None	Cobble, gravel	Some vegetation, concrete lined banks, rip-rap. mud

Table 6. River des Peres Transect Depth Summary for Class P Reaches

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Transect	Mean Depth	Maximum Depth				
(#)	(ft.)	(ft.)				
Site #17	0.66	1.35				
Site #18	0.49	1.15				
Site #19	0.71	0.90				
Site #20	0.41	0.80				
Site #21	0.38	0.60				
Class P Reach	0.53	1.35				

<sup>\*</sup>Site #22 was not measured due to vertical drop-off near Mississippi River.

#### C. Recreational Use Interviews

Four members of the River des Peres Watershed Coalition and fifteen nearby residents, employees, or passers-by were interviewed by MEC staff as part of recreational use surveys (Appendix D). Questions asked of each interviewee include but are not limited to:

- Have you or your family used River des Peres for recreational purposes?
- Have you personally observed another party using River des Peres for recreational purposes?
- Have you heard of another party using River des Peres for recreational purposes?

All interviewees responded that they had not personally used surveyed segments of River des Peres for swimming or other WBCR uses. Connie Recker, Community Center Director for the Salvation Army, had witnessed individuals swimming in River des Peres. This incident occurred about ten years ago during moderate to high flow conditions in River des Peres. The Senseney's also stated that swimming was observed very infrequently during their 60 years of residing near River de Peres. Two interviewees observed water skiing during the 1973 flood. Several interviewees witnessed or heard about individuals wading, canoeing, and fishing in the lower reaches of River des Peres. Other interviewees have observed secondary contact uses, such as wading, in stream reaches well upstream of the study reaches (University City area).

#### V. WHOLE BODY CONTACT RECREATION USE CONSIDERATIONS

A designated use may only be downgraded or removed if this use is not an existing use and is considered unattainable. Therefore, the UAA process must include consideration of both existing uses and attainability of potential uses. The following sections include existing use and use attainability considerations that provide the basis for the WBCR use recommendations.

#### A. Existing Use Considerations

Provisions contained within the CWA prohibit removal of an existing use that was attained on or after November 28, 1975. Use attainment is measured by assessing compliance with applicable water quality standards (beneficial uses and water quality criteria). In the case of

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recreational contact uses (swimming, etc.), existing use considerations should be based upon attainment of both:

- The Beneficial Use, i.e. historic use of the waterbody in question for swimming, water skiing, skin diving, etc.; and
- The Water Quality Criteria that support the beneficial use, i.e. historic (after 11/28/75) and current levels of pathogen indicator bacteria.

In summary, a recreational use should be considered attained and existing when the waterbody is used for a specified recreational activity and is concurrently supported by levels of water quality adequate for the specific use.

#### 1. Beneficial Use Evaluation

It is concluded that surveyed reaches of River des Peres are not frequently being used for WBCR during baseflow conditions based on:

- Absence of observed use by MEC staff;
- Absence of personal use by local citizenry;
- Very infrequent observed use by local citizenry during baseflow conditions; and
- Absence of substantive evidence such as rope swings, docks, diving platforms, etc.

As discussed earlier, Connie Recker and the Senseney's witnessed very infrequent swimming activities during periods of moderate to high river stages. Presumably, higher flows provided sufficient depths for WBCR activities at the time swimming was observed. Steep streambanks and intermittent fencing along the study reach may limit potential WBCR use by restricting access to the general public. Swimming or WBCR should not be considered an existing use within surveyed reaches of River des Peres due to only very infrequent WBCR uses observed by interviewees.

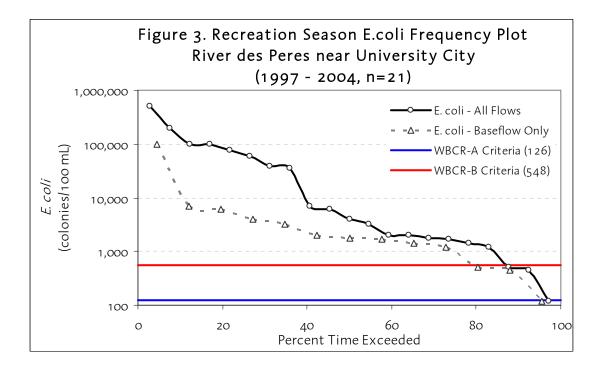
#### 2. Water Quality Criteria Evaluation

MDNR is proposing a tiered approach to recreational use classification. The proposed Category A of WBCR (WBCR-A) will include waters that have been established as public swimming areas allowing full and free access by the public for swimming purposes and waters with existing whole body contact recreational use. MDNR currently proposes this WBCR use category for waters that are currently designated for WBCR in Missouri's Water Quality Standards. Water quality criteria assigned to the proposed WBCR-A use are fecal coliform and *E. coli* geometric means of 200 and 126 colonies per 100 mL, respectively. These criteria are based upon an illness risk of 8 illnesses per 1000 WBCR exposures. Proposed Category B of WBCR (WBCR-B) contains all other waters designated for WBCR not contained within Category A. The proposed Missouri Water Quality Standards regulations include designation of River des Peres for WBCR-B use. The water quality criterion assigned to WBCR-B is an *E. coli* geometric mean of 548 colonies /100 mL, based upon an illness risk of 14 illnesses per 1000 WBCR exposures.

A frequency plot of recreation season bacteria data collected by USGS several miles upstream of the study area near University City from 1997 through 2004 indicate that the proposed *E.* 

coli WBCR-A criterion has been met once, at baseflow conditions, during the eight year period of record (Figure 3). In addition, proposed WBCR-B E. coli criteria were exceeded by 87% of

collected recreation season samples (Figure 3). Recreation season geometric means listed by year and flow condition indicate that the proposed *E. coli* WBCR-A has never been met and proposed WBCR-B criteria was only met once in 2003 during baseflow conditions (Table 7). The existing fecal coliform WBCR-A criterion has not been met at University City during the eight year period (Figure 4, Table 8). Available data indicate that water quality in reaches upstream of the study area do not meet criteria required to support WBCR uses during the recreation season.



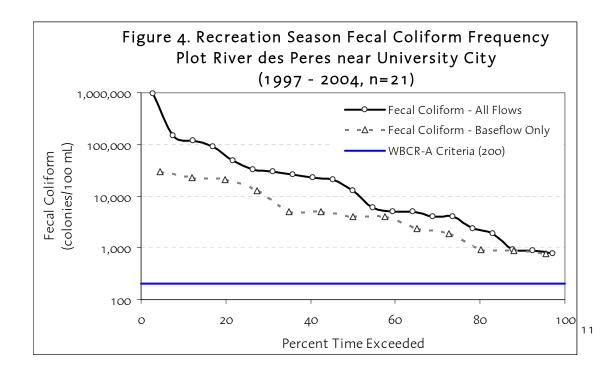


Table 7. Annual Recreation Season *E. coli* Concentrations in River des Peres near University City

,	All Flows			Baseflow Onl	y
Year (YYYY)	Sample # (#)	Geomean* (col./100 mL)	Year (YYYY)	Sample # (#)	Geomean* (col./100 mL)
1997	2	100,000	1997	1	100,000
1998	2	10,100	1998	1	1,700
1999	3	11,261	1999	2	1,673
2000	3	5,919	2000	2	2,400
2001	3	26,552	2001	1	1,200
2002	3	3,200	2002	2	917
2003	3	771	2003	2	478
2004	2	4,980	2004	2	4,980
1997 - 2004	21	7,456	1997 - 2004	13	2,102

<sup>\*</sup>Geomeans based on less than 5 samples during steady-state conditions may not appropriately characterize central tendencies.

Table 8. Annual Recreation Season Fecal Coliform Concentrations in River des Peres near University City

	All Flows		Baseflow Only		
Year (YYYY)	Sample # (#)	Geomean* (col./100 mL)	Year (YYYY)	Sample # (#)	Geomean* (col./100 mL)
1997	2	67,082	1997	1	30,000
1998	2	14,859	1998	1	2,400
1999	3	42,901	1999	2	9,165
2000	3	9,865	2000	2	4,472
2001	3	41,555	2001	1	23,000
2002	3	7,260	2002	2	3,458
2003	3	1603	2003	2	828
2004	2	3,082	2004	3	2,251
1997 - 2004	21	12,327	1997 - 2004	14	4,378

<sup>\*</sup>Geomeans based on less than 5 samples during steady-state conditions may not appropriately characterize central tendencies.

A limited dataset is available within UAA study reaches from the USGS gage located at Morganford Road (Table 9). The geometric mean of six recreation season samples do not meet bacteria criteria that support WBCR designation. In addition, the paucity of data collected at this site suggests that attainment evaluations are not appropriate.

Table 9. Recreational Season Bacteria Data for USGS 07010097 River des Peres at St. Louis

-,,						
	Discharge	Fecal Coliform	E. coli			
Date/Time	(cfs)	(col./100mL)	(col./100mL)			
10/29/2002 3:00	314	24,000	39,000			
6/9/2003 15:50	2.4	520	240			
8/11/2003 13:15	0.3	470	270			
10/9/2003 14:55	2840	84,000	63,000			
5/17/2004 12:00	6.2	92	42			
8/3/2004 15:45	10	420	88			
2002 - 2004 (geomean)		1,634	915			

#### 3. Existing Use Conclusions

Information and data collected during this study suggest that WBCR uses are infrequent in lower River des Peres and do not represent an existing use that has been attained. This existing use conclusion is based upon the absence of current WBCR use, historical (post-11/28/75) evidence of only very infrequent WBCR use, and the prevalence of *E. coli* and fecal coliform levels that exceed proposed water quality criteria that support WBCR use.

#### B. Attainability of Whole Body Contact Recreational Use

The CWA precludes the removal of existing or attainable uses. As presented above, WBCR use within River des Peres is not an existing use. For WBCR to be considered unattainable, one or more of six conditions described in 40 CFR 131.10(g) and MNDR UAA protocols must be satisfied. Multiple use attainability factors outlined in Federal regulations may apply to River des Peres, including use attainment prevented by: natural concentrations of pollutants (Factor 1), low flow, shallow conditions (Factor 2), non-remedial human caused conditions (Factor 3), hydrologic modifications (Factor 4), and substantial and widespread economic and social impacts (Factor 6).

#### 1. Natural Concentrations of Bacteria Prevent Use Attainment

Bacteria in urban stormwater runoff and baseflow originate from numerous sources. Bacterial source tracking studies completed in Blue River and Brush Creek, located within Kansas City, MO, yielded an even distribution between dogs (28.3%), geese (22.1%), humans (23.4%), and unknown sources (26.2%) (Wilkison et al. 2002). Nationally, an intensive effort in San Diego's Mission Bay determined 67% of pathogenic bacteria originated from avian sources, 9% from dogs, and only 5% from humans (Gruber et. al 2005). MSD has contracted with the USGS to conduct a bacterial source tracking study to characterize pathogen levels caused by natural and human sources. Results from the study may determine if natural bacteria alone could prevent WBCR use attainment.

# 2. Natural, Ephemeral, Intermittent, or Low Flow Conditions Prevent Use Attainment MDNR has determined that natural, ephemeral, intermittent, or low flow conditions prevent WBCR uses if:

- the average depth of the waterbody is less than 1.64 feet over 50% of all the water surveyed from an observation point; or
- the maximum depth less than 3.28 feet.

WBCR use is considered unattainable due to low flow and shallow conditions that are prevalent throughout surveyed stream segments. Mean depths calculated from twenty-one representative transects was 0.6 ft. while a maximum transect depth of 2.05 feet was measured at Site #1. A small localized pool with a maximum depth greater than three feet was noted near Site #15; however, this feature is not representative of the majority of surveyed reaches. This pool is a result of scour from wet weather discharges and should be mitigated by MSD with ongoing channel maintenance efforts to prevent further scouring and stream instability.

#### 3. Non-Remedial Human Caused Conditions Prevent Use Attainment

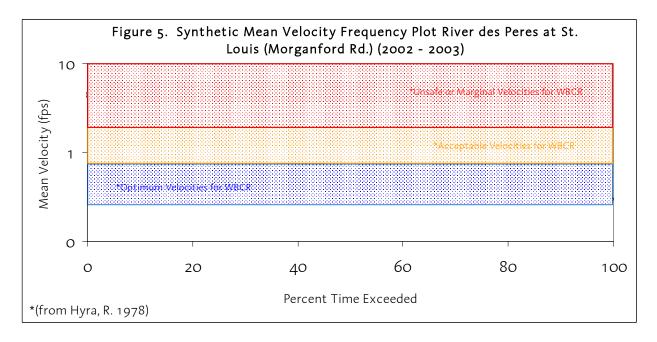
There are no municipal continuous point source discharges of bacteria upstream of the University City gage, yet proposed WBCR-A and WBCR-B criteria are exceeded 94% and 76% of the time, respectively, during baseflow conditions (see Section V.A.2.). Influence from potential diffuse point sources are not presently quantified in the watershed. However, landuses within the study area have remained essentially unchanged since 1975 based upon comparison of Webster Grove Quadrangle Maps generated in 1974 and 1998. This observation suggests that urban stormwater water quality has not significantly changed since 1975.

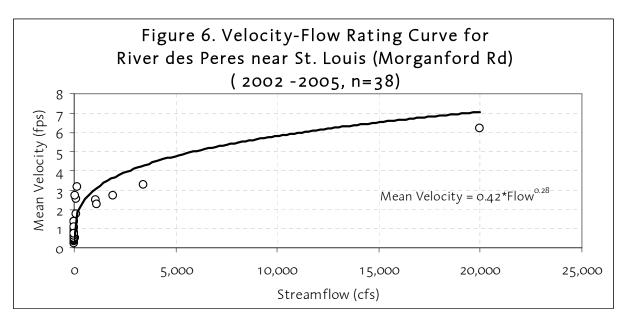
Attainment of WBCR uses may be challenging for many urban waters. Median bacteria concentrations (fecal coliform - 5,081 colonies/100mL, *E. coli* – 1,750 colonies/100 mL) collected from urban stormwater as part of the EPA National Pollutant Discharge Elimination System (NPDES) Phase 1 stormwater program exceed WBCR-A and WBCR-B criteria (Pitt et al. 2003). As the quality of urban runoff is often associated with land use, any significant changes to land use composition required to meet WBCR criteria may represent a non-remedial condition that prevents use attainment.

#### 4. Hydrologic Modifications Prevent Use Attainment

The channelization of River des Peres and development of its watershed represent hydrologic modifications. Much of River des Peres is channelized and lined with concrete. Coupled with increased runoff volumes and peak flows from impervious areas, channelized streams exhibit increased stream velocities for a given flow rate. A frequency plot (Figure 5) of mean velocities for flows recorded at the Morganford gage was developed from the velocity-flow rating curve (Figure 6). According to Hyra (1978), optimal water velocities for swimming range from 0.25 to 0.75 feet per second (fps) while those exceeding 2 fps are considered marginal and unsafe at greater than 3 fps. Marginal swimming conditions based on velocity boundaries are exceeded approximately 7% of the time at the Morganford gage and correspond to flows above approximately 235 cubic feet per second. However, shear forces and extraction challenges presented by concrete embankments may cause safety risks at velocities less than 2 fps.

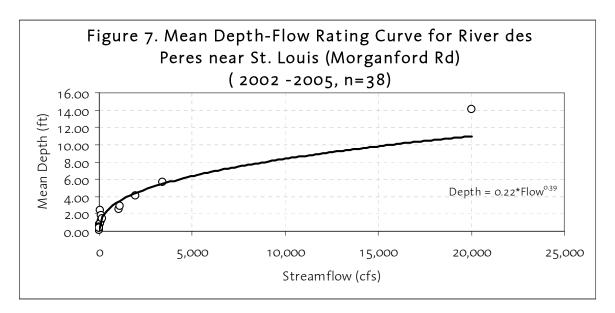
Further investigation into runoff and velocity regimes in the study area would allow identification of velocity hazards.





Mean depth thresholds (≥1.64 feet) set forth in MDNR UAA protocols correspond to flows near 161 cfs according to the depth-flow rating curve developed for the Morganford gage (Figure 7). This analysis demonstrates that WBCR uses may be unattainable due to hydrologic modifications.

These modifications result in high velocities during most periods of stormwater runoff when the depth is otherwise sufficient to support WBCR use. However, the extent to which channel characteristics at the Morganford Road gage are applicable to ungaged sites within the study reach is uncertain.



5. Substantial and Widespread Social and Economic Impact Prevent Use Attainment MSD is in the process of developing a CSO Long Term Control Plan (LTCP). As part of the LTCP, the economic impacts of different CSO control options will be evaluated. The public participation process will also aid in determining the level of control and financial impact desired by the community. Other cities, such as Boston, Portland, and Milwaukee, have found that support of swimming uses in urban streams is not economically feasible.

#### VI. CONCLUSIONS

As currently delineated, the classified sections of River des Peres do not support existing WBCR uses due to the absence of observed or frequent historical recreational use and water quality that does not support the use. Therefore, WBCR is not an existing use.

WBCR use is not attainable for River des Peres and should not be designated as such. Low-flow, shallow conditions were observed at all twenty-two survey sites. Although a small pool having depths greater than three feet was observed near Site#15, this area is not representative of the classified segments. This pool is a result of scour from wet weather discharges and should be mitigated by MSD to prevent further scouring and stream instability.

In addition to low-flow, shallow conditions preventing WBCR use attainability, several other use attainability factors may demonstrate that WBCR use is unattainable. Additional information may be needed to determine if natural pollutant levels, non-remedial conditions, hydrologic modifications, or widespread economic impacts also support removing WBCR use for River des Peres.

#### VII. REFERENCES

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- Pitt, R., A. Maestre, and R. Morquecho. 2003. The National Stormwater Quality Database.

  Department of Civil and Environmental Engineering. University of Alabama. Tuscaloosa.
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- Wilkison, D., D. Armstrong, and D. Blevins. 2002. Effects of Wastewater and Combined Sewer Overflows on Water Quality in the Blue River Basin, Kansas City, Missouri and Kansas, July 1998-October 2000. Water-Resources Investigations Report 02-4107. U.S. Geological Survey, Rolla, MO.

### Appendix A

MDNR Recreational Use Stream Survey Forms (Data Sheets A and B) and River des Peres Site Photographs

# Field Data Sheets for Recreational Use Stream Surveys

# Data Sheet A – Water Body Identification

Water Body Name: River Des Peres
(from USGS 7.5' quad)
8-digit HUC: 07140101
Missouri WBID # 1710 & 1711
County: St. Louis City
Upstream Legal Description: N/A French Survey
Downstream Legal Description: N/A French Survey
Upstream Coordinates: 38.57394, -90.30666
(USG 84, dd,dddd)
Downstream Coordinates: 38.53492, -90.26352
(USG 84, dd.dddd)
Discharger Facility Name(s): N/A
Discharger Permit Number(s): N/A
Number of Sites Evaluated: Twenty-two (22)
Name of Surveyor and Telephone Number: Trent Stober (573) 443-4100
Organization: MEC Water Resources, Inc.
Position: Senior Project Manager

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed:	LA SA	Date: 7/7/05

# Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #:	La Lange Y &	Cita Lacati			
Site Lat/Long: 0 73 4 6	17 / 4272909 6	Site Locati			
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Personnel: Rin/Nm	04 7030	Facility Na			
Current Weather Con	ditions: A	Permit Nur		£ D + +	
Photo Ids: Upstream		stream: 4	onditions	for Past 7 days: Ou	ewast
	/ J	stream. 4		Other:	
Used Observed*:					
☐ Swimming	☐ Skin Diving	☐ SCUBA divi	ng 🗍	Tubing	☐ Water Skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	<u> </u>	Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing		None of the above	
Describe: (include nur	nber of individuals	recreating free	uency of	Thorse of the above	Other
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inusual items of interest.	.)			onal uses. Attach pho	tos of evidence or  Campgrounds
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City/county parks	□ Playgrounds	☐ MDC cons	ervation orests	<b>☆</b> Urban areas	☐ Campgrounds
City/county parks  ☐ Boating accesses ☐ No trespass sign	☐ Playgrounds ☐ State parks ☐ Fence	☐ MDC cons lands ☐ National f	ervation orests	☑ Urban areas	☐ Campgrounds
□ Boating accesses □ No trespass sign  Evidence of Human L	☐ Playgrounds ☐ State parks ☐ Fence  Jse*:	☐ MDC cons lands ☐ National f	ervation orests	☑ Urban areas	☐ Campgrounds
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□ Boating accesses □ No trespass sign  Evidence of Human L	☐ Playgrounds ☐ State parks ☐ Fence  Jse*:	□ MDC cons lands □ National f Steep slo	orests	☐ Nature trails☐ Other:	☐ Campgrounds  ☑ Stair (walkway)
□ Boating accesses □ No trespass sign  Evidence of Human L	☐ Playgrounds ☐ State parks ☐ Fence  Jse*: ☐ Foot	☐ MDC cons lands ☐ National f ☐ Steep slo	orests opes	☐ Nature trails ☐ Other: ☐ Livestock	☐ Campgrounds   Stair walkway  □ RV/ATV Tracks
Unusual items of interest.  City/county parks  □ Boating accesses □ No trespass sign  Evidence of Human to Roads  □ Rope swings	☐ Playgrounds ☐ State parks ☐ Fence  Jse*: ☐ Foot paths/print	☐ MDC cons lands ☐ National f ☐ Steep slc	orests opes	☐ Nature trails ☐ Other: ☐ Livestock Watering	☐ Campgrounds  ☑ Stair (walkway)
Unusual items of interest.  City/county parks  □ Boating accesses □ No trespass sign  Evidence of Human to Roads □ Rope swings	☐ Playgrounds ☐ State parks ☐ Fence  Jse*: ☐ Foot paths/print ☐ Camping Si	☐ MDC cons lands ☐ National f ☐ Steep slc	orests opes	☐ Nature trails ☐ Other: ☐ Livestock ☐ Watering ☐ NPDES	☐ Campgrounds  Stairs walkway  □ RV/ATV Tracks
Unusual items of interest.  City/county parks  □ Boating accesses □ No trespass sign  Evidence of Human to Roads  □ Rope swings	☐ Playgrounds ☐ State parks ☐ Fence  Jse*: ☐ Foot paths/print ☐ Camping Si	☐ MDC cons lands ☐ National f ☐ Steep slc	orests opes	☐ Nature trails ☐ Other: ☐ Livestock ☐ Watering ☐ NPDES	☐ Campgrounds  Stairs walkway  □ RV/ATV Tracks

**Site Locations Map(s):** Attach a map of entire segment with assessment sites clearly labeled. Mark any other items that may be of interest. (Include photographs)

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

# Page Two - Data Sheet B for WBID #:

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Surface	Ø Oil		☐ Scum	☐ Foam	None	□ Other
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# **MEC Water Resources**

# Stream Morphology & Discharge Measurements

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# Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

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Personnel: Rm /vi Current Weather Cond	itions: Our	Permit Number:		
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☐ Swimming	☐ Skin Diving	☐ SCUBA diving	☐ Tubing	☐ Water Skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	None of the above	
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evidence of recreations	al uses, etc.	serversing, resqueries	or ase, prioto accume	
Surrounding Condition	<b>ns*:</b> (Mark all that p	romote or impede recr	eational uses. Attach pho	tos of evidence or
unusual items of interest.)				
<b>X</b> City/county parks	☐ Playgrounds	☐ MDC conservat	ion 🗶 Urban areas	☐ Campgrounds
		lands		10
☐ Boating accesses	☐ State parks	☐ National forests	S ☐ Nature trails	X Stairs/walkway
□ No trespass sign	☐ Fence	X Steep slopes	☐ Other:	
Evidence of Human U	se*:			
Roads	□ Foot	☐ Dock/platfor	m 🗆 Livestock	RV/ATV Tracks
	paths/prints		Watering	I WILLIAM ITACKS
☐ Rope swings	☐ Camping Sit		☐ NPDES	☐ Fishing Tackle
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**Site Locations Map(s)**: Attach a map of entire segment with assessment sites clearly labeled. Mark any other items that may be of interest. (Include photographs)

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

## Page Two – Data Sheet B for WBID #:

ƘRiffle	Width(ft) 2	8.01	ength(ft)	50	Ave. Depth(ft)	0.2	Max. D	epth(f	t) 0.5
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Flow	Present?	(Yes)	No		Estimated (ft <sup>3</sup> /	sec):	0.	8	
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] Pool	Width(ft)		Length(ft)		Ave. Depth(ft)		Max. D	epth(f	t)
Flow	Present?	Yes	No		Estimated (ft <sup>3</sup> /	sec):	C	1,5	
<i>10</i> %Cobb						•	Mud/Cla		Concre
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### **MEC Water Resources**

### Stream Morphology & Discharge Measurements

Project Name/Number: <u>MSD - River</u> des feus Date/Time: <u>1/30 / 10/20/29</u>

Site/Transect ID Number: <u>2 - 156</u> Start Time: 1/30 Measured by: Real Morphology Between Transects Weather Cond: [ [ Cocica ) ] Length of Pools Length of Run Length of Riffles Start GPS LDP Start GPS ft. End GPS # Start GPS # End GPS # ft. End GPS # RDD 1 500 150 200 LOE 250 50 6 7 8 9 10 11 12 13 14 15 Stream Morphology At Transect LDB Angle: 25 % RDB Angle: \_\_\_\_\_ Secchi (ft) \_\_\_\_ Turbidity (NTU): \_\_\_\_ @31.5 25 5" 10% Gravel 20% Sand 50% Channel Comp (%): Cobble Riparian Corridor Density: Width of Riparian Area: Compostion of Riparian Vegitation: General Observations: **Stream Discharge Measurements** Beginning Stage Ending Stage: Total Q: Channel Width: Total Area: Average Velocity: Distance from Datum to Water Surface: Start: Meas. type: Price AA Pygmy Data Coll. Type: Aqua Calc Sheet Aqua Calc Transect #:

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Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	Width	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	At Point		ity (f/s) Mean in Ver- tical	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cfs
	1 (EOW)		0		0,55	0	0	0		0	0			
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				20.5	2.9									
				23.5	06	<u> </u>								
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# Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri MIDID #						
Missouri WBID #: U.	iclassifical		Site Location Des		,	
Site Lat/Long: #157	6735053 /427242	'Z)	T-3 River	de.	sPeres	
Date & Time: 10/20/04	1200		Facility Name:			
Personnel: RM/NM			Permit Number:			
Current Weather Conc			Weather Condition	ns	for Past 7 days:	cuast
Photo Ids: Upstream	: Down	stre	eam:		Other: photos 9-	12
Used Observed*:					/	
☐ Swimming	☐ Skin Diving		SCUBA diving		Tubing	☐ Water Skiing
☐ Wind surfing	☐ Kayaking		Boating		Wading	☐ Rafting
☐ Hunting	☐ Trapping		Fishing	12/	None of the above	☐ Other
Describe: (include num	ber of individuals i	ecr	reating, frequency	$\alpha$	use photo-documer	ntation of
evidence of recreation	al uses, etc.		ousg, rroquericy	<b>.</b>	ase, photo documen	itation of
Surrounding Condition	ons*: (Mark all that p	rom	note or impede recre	atio	onal uses. Attach pho	tos of evidence or
unusual items of interest.)	,		•		The second property of	tos or evidence of
City/county parks	☐ Playgrounds		MDC conservation	on	Urban areas	☐ Campgrounds
	78		lands	J. 1	Croditateas	- Campgrounds
☐ Boating accesses	☐ State parks			_	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	X Fence	X			Other:	
					other.	
Evidence of Human U	se*:					
Roads	□ Foot		☐ Dock/platforn		☐ Livestock	RV/ATV Tracks
Account	paths/prints		- Dock/platfoff	.,	Watering	KV/ATV Tracks
☐ Rope swings	☐ Camping Si		☐ Fire pit/ring		□ NPDES	
a Rope Swings	Camping 3	LCS	□ The pidning		l	☐ Fishing Tackle
XOther:					Discharge	
			•			
DULEY Ira	cks, Dischar	90	pipes			

**Site Locations Map(s)**: Attach a map of entire segment with assessment sites clearly labeled. Mark any other items that may be of interest. (Include photographs)

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

## Page Two – Data Sheet B for WBID #:

Upstream Vie	Width(ft)	23		Zo' Ave. Depth(ft)	0.5 M	ax. Depth(ft)	0.65
	Width(ft)	31,51		400' Ave. Depth(ft)	8.65 Ma	ax. Depth(ft)	0,8
	Width(ft)	25'		Ave. Depth(ft)	Ma	ax. Depth(ft)	0,58
	Present?	Yes	PRM	Estimated (ft³/s	sec):	. 3	
Downstream	View Physi	cal Dim	ensions:				
□ Riffle '	Width(ft)		Length(ft)	Ave. Depth(ft)		ax. Depth(ft)	
<b>X</b> Run	Width(ft)	31.5		500' Ave. Depth(ft)		ax. Depth(ft)	0.7
[ <b>X</b> Pool	Width(ft)	25	Length(ft)	75' Ave. Depth(ft)		ax. Depth(ft)	0,6
☐ Flow	Present?	Yes	) No	Estimated (ft³/s	sec):	0.4	
Substrate*: (					0/14	VG 4.5	0/ 0 1 1
10 %Cobble	20	%Grav	el 309	%Sand ——%Silt	— %Mud	I/Clay 40	%Bedrock
							Coner
Simull omb	of hilam	entous	algae on	tation or algal growth Substrute, aquatic			Concre
<i>Sinull en ts</i> Water Chara	cteristics*:	(Mark a	I that apply.	substrate, aquatic	plants o	n middle	gravel lu
Sinall em (5 Water Chara Odor:	cteristics*:	(Mark a	I that apply.)  M Musky	Substrate, aquatic	Plants o	n middle g	ijnuel kra
Small emb Water Chara Odor: Color: Bottom	cteristics*:	(Mark al	I that apply.	substrate, aquatic	plants o	n middle g	gravel bra
<i>Small</i> en to Water Chara	cteristics*:  Sewag	(Mark al	I that apply.)  Mi Musky  Green	Substrate, aquatic  ☐ Chemical  ☐ Gray  ☐ X Fine	□ None □ Milky	□ Othe	gravel bra
Water Chara Odor: Color: Bottom Deposit: Surface Deposit: Comments: Pl	cteristics*:  Sewas Clear Sludg Oil	(Mark alge	I that apply.  Musky Green Solids Scum	☐ Chemical ☐ Chemical ☐ Gray ☐ Fine ☐ Sediments ☐ Foam  ts (including information	None   None   None   None	On Middle 2	er er er
Water Chara Odor: Color: Bottom Deposit: Surface Deposit: Comments: Pl This information ore comprehe	cteristics*:  Sewage Clear Sludg  Oil  ease attach on is not to b nsive unders sion on the r	(Mark alge addition e used so tanding	I that apply.  Musky Green Solids Scum  Cleiy for remoof water cond	☐ Chemical ☐ Chemical ☐ Chemical ☐ Foam	None   None   Milky   None   None	Othe Othe Othe Othe terviews) to the on is not intended	er er er o provide a
Water Chara Odor: Color: Bottom Deposit: Surface Deposit: Comments: Pl This information ore comprehenfluence a deciration of the control of t	cteristics*:  Sewage Clear Sludg  Oil  ease attach on is not to b nsive unders sion on the r ise.  ned, hereby	(Mark alge addition e used so tanding ecreation affirm to the sortion of the sort	I that apply.  Musky Green Solids Scum  nal commen  blely for remo of water conce use analysis	Chemical Che	None    None   Milky   None    None   None	Othe Othe Othe Othe Othe  terviews) to the on is not intended further analy	er er er o provide a ded to directlysis or that

# **MEC Water Resources**

# **Stream Morphology & Discharge Measurements**

				Project Na Date/Ti	me/Numb	er:	MSD 1200	- Kire	e des i	Peics	
			Si	te/Transec	t ID Numb	er:	3 /	7#			
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	#	ft.	#	End GPS #			End GPS #		#	End GPS #	
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Stream Discharge Measurements													
								Velocity (f/s)		7.			
Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	<b>Wi</b> dth <i>Ç</i> ∤`	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	At Point	Mean in Ver- tical	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cfs)
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# Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

	iossified	1	Site Location Descr	intion:				
Site Lat/Long: IFI (07:	35 288 /427218	<del>2</del> )	T-4 River des Peres					
Date & Time: 10/20/04	1230		Facility Name:					
Personnel: Pill Nu			Permit Number:					
Current Weather Condit	ions: Oppicant		Weather Conditions for Past 7 days: Overcast					
Photo lds: Upstream:	Down	stre	eam: Other: photos 12-16					
Used Observed*:				- Process	2 10			
☐ Swimming ☐	Skin Diving		SCUBA diving	Tubing	☐ Water Skiing			
☐ Wind surfing ☐	Kayaking		Boating	Wading	☐ Rafting			
☐ Hunting ☐	Trapping		Fishing	None of the above	e 🗆 Other			
Describe: (include numbe	er of individuals	recr	eating frequency of	use photo-docume	entation of			
· /	s*: (Mark all that p	orom	MDC conservation		otos of evidence or   Campgrounds			
City/county parks	☐ Playgrounds		MDC conservation lands	X Urban areas	☐ Campgrounds			
City/county parks  Boating accesses	☐ Playgrounds ☐ State parks		MDC conservation lands National forests	✓ Urban areas  □ Nature trails	☐ Campgrounds ☐ Stairs/walkway			
□ Boating accesses □ No trespass sign	☐ Playgrounds ☐ State parks ☐ Fence		MDC conservation lands National forests	✓ Urban areas  □ Nature trails	☐ Campgrounds			
□ Boating accesses □ No trespass sign  Evidence of Human Use	☐ Playgrounds ☐ State parks ☐ Fence ★:		MDC conservation lands National forests Steep slopes	✓ Urban areas  ☐ Nature trails  ✓ Other: Fence	☐ Campgrounds ☐ Stairs/walkway cpening ~ 150 ' downs			
□ Boating accesses □ No trespass sign	☐ Playgrounds ☐ State parks ☐ Fence		MDC conservation lands National forests	✓ Urban areas  □ Nature trails	☐ Campgrounds ☐ Stairs/walkway			

**Site Locations Map(s):** Attach a map of entire segment with assessment sites clearly labeled. Mark any other items that may be of interest. (Include photographs)

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

Stream Morphol Upstream Viev	logy: w Physical Dimer	nsions:			
	/idth(ft) Z51		ので Ave. Depth(ft)	0,45 Max. Dep	oth(ft) 0,72
<b>⊠</b> Run W	Vidth(ft) 25′	Length(ft) 5	ひ ′ Ave. Depth(ft)	0,45 Max. Dep	th(ft) 0,75
□ Pool W	Vidth(ft)	Length(ft)	Ave. Depth(ft)	Max. Dep	th(ft)
X Flow Pi	resent? (Ye	s) No	Estimated (ft³/s	sec): /. 0	
Downstream \	View Physical Dir	nensions:			
X Riffle ₩	/idth(ft) 20'	Length(ft) 57	O' Ave. Depth(ft)	0.5 Max. Dep	
IX Run V	Vidth(ft) 23	Length(ft)/の	アイAve. Depth(ft)	0, 45 Max. Dep	
☐ Pool W	Vidth(ft)	Length(ft)	Ave. Depth(ft)	Max. Dep	oth(ft)
☐ Flow Pi	resent? (Ye	s) No	Estimated (ft³/s	sec): /, 0	
/8 %Cobble  Aquatic Vege	50 %Gra	ount of vegetati			
	teristics*: (Mark			None	0.1
Odor:	Sewage (D	Musky	☐ Chemical	<del></del>	Other
Color:	☑ Clear	Green	☐ Gray	☐ Milky ☐	Other
Bottom Deposit:	☐ Sludge	☐ Solids	<b>☼</b> Fine sediments	☐ None ☐	Other
Surface Deposit:	□ Oil	X Scum	☐ Foam	□ None □	Other
*This information more comprehen	is not to be used sive understandin on on the recreati	onal comments ( solely for removal g of water condition	including informat of whole body conta ons. Consequently, tl t may point to condi	ct recreation but rat his information is no	her is to provide a t intended to directly
I, the undersign datasheet is tru	ed, hereby affirm				ported on this UAA
Signed: [][[]	e Menta	Dat	e: 10/20/04 sition: <u>Environ</u>	. 1	

### **Stream Morphology & Discharge Measurements**

Project Name/Number: MSD - Rive. des pers

Date/Time: 1996/02/ 1996

Site/Transect ID Number: 4

Start 7	Гіте: <u>12</u>	175C	_					End Time:	12 43	)
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Channel Comp (%):	•	Cobble		Grave	<u>50</u>	Sand_	30	Silt	Appropriate to the contract of	
Bank Compostion _		Other /	Mud - 2	2%				=		
Bank Compostion	F	Test view	rap /	1000	Contract.	- 1 5 A 1 1				
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Mperium eviller 20.	-		_							
	ı	Compostion	n of Riparian '	Vegitation:						
General Observation	ie.			······································			· · · · · · · · · · · · · · · · · · ·			
			Strea	m Disch	arge Meası	urements	***			
Beginning Stage								Total Q:		
Channel Wid		<del> </del>	Total .	Area:			Average	e Velocity:		
Distance fron	n Datum to V	Nater Surfac	:e:	Start:				End:		
Meas. ty	pe: Price A	AA Pygmy	Data Coll.	Type: Aqu	ua Calc Sheet		Aqua Calc Tra			

	l	1			1				uremen Vel	ocity (f/s)	ي		
Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	Width ´C.i`	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	At Point	Mean in Ver-	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cf
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#### Data Sheet B – Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: un	relassified		Site Location Des	cri	iption:	
Site Lat/Long: #160(	0735523/4271953	<sub>4</sub> )	+-5 Pure		•	
Date & Time: polzel 04	1400	_	Facility Name:	~_3	1.57.03	
Personnel: NM/Pin			Permit Number:			
Current Weather Conc			Weather Condition	ns	for Past 7 days: Q	versust
Photo Ids: Upstream	: Downs	stre	eam:		Other: plustes 17	
Used Observed*:						
☐ Swimming	☐ Skin Diving		SCUBA diving		Tubing	☐ Water Skiing
☐ Wind surfing	☐ Kayaking		Boating		Wading	☐ Rafting
☐ Hunting	□ Trapping		Fishing	Ì	None of the above	□ Other
Describe: (include num	ber of individuals r	ecr	eating, frequency	of	use. photo-docume	ntation of
evidence of recreation	al uses, etc.		ζ, μ		are, prove decume	
Surrounding Condition	ons*: (Mark all that p	rom	note or impede recre	ati	onal uses. Attach pho	otos of evidence or
unusual items of interest.)					·	
City/county parks	☐ Playgrounds		MDC conservation	on	Urban areas	☐ Campgrounds
			lands			10
☐ Boating accesses	☐ State parks		National forests		☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	Ż	Steep slopes		XOther: Ceme	Farm.
					COVICE CONTRACTOR	
Evidence of Human U	se*:					
Roads	□ Foot		☐ Dock/platform	 n	☐ Livestock	X RV/ATV Tracks
•	paths/prints	;		•	Watering	EXIVIAL VITACKS
☐ Rope swings	☐ Camping Sit	_	☐ Fire pit/ring		□ NPDES	☐ Fishing Tackle
, ,			p.vg		Discharge	- 1 ISTINING TACKIE
Other:					Discharge	
Service DA	ad , discharge	0	DiMA			
	Con Contraction	<u> </u>	prins -			

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

#### Page Two - Data Sheet B for WBID #:

☐ Riffle	View Physical Width(ft)		Length(ft)	Ave. Depth(ft)	_	Max. De	oth(ft)	
Z Run	Width(ft)	H.		500' Ave. Depth(ft)	0.6	Max. Dep	oth(ft)	0.8
Z Pool	Width(ft)	272	Length(ft)	500'Ave. Depth(ft)	0.4	Max. Dep	oth(ft)	0.6
KFlow	Present?	Yes		Estimated (ft³/s	ec):	0.5		
Downstre	am View Phys	ical Dim	ensions:					
∡′ Riffle	Width(ft)	251	Length(ft)	20 / Ave. Depth(ft)	0.1	Max. De	pth(ft)	0.33
Z <b>\</b> Run	Width(ft)	23'	Length(ft)	/ の 'Ave. Depth(ft)	0.4	Max. Dep	oth(ft)	0.8
X Pool	Width(ft)	23'	Length(ft)	300 / Ave. Depth(ft)	0.5	Max. Dep	oth(ft)	1.0
Flow	Present?	Aes	) No	Estimated (ft³/s	sec):	1.0		
5 %Cot	e*: (These value oble 50	%Grav		%Sand — %Silt	-1	Mud/Clay	10	%Bedrock
Aquatic V	/egetation*: (n	ote amo	ount of vege	tation or algal growth	at the a	ssessmen	t site)	al chat
Snow we Water Ch	naracteristics*:	(Mark a	ll that apply.	gravel bur, very )	minim	al algae	6M S	
<b>Mater Ch</b> Odor:	paracteristics*:	(Mark a	ll that apply.  Musky	gnavel but, very )    Chemical	Minim	e 🗆	Othe	er
Water Ch Odor: Color: Bottom	naracteristics*:	(Mark a	ll that apply.	Chemical  Chemical  Gray  Fine	minim	e   y	Other	er er
Smurtne	aracteristics*: ☐ Sewa	(Mark a	ll that apply.     Musky   Green	gnavel bar, Very ) □ Chemical  (X Gray	<i>MINIM</i> ☐ Non ☐ Milk	e   e   c	Othe Othe	er er er
Water Ch Odor: Color: Bottom Deposit: Surface Deposit:	aracteristics*:  Sewa Clear Sludg	(Mark a ge	Il that apply.    Musky     Green     Solids	Chemical  Chemical  Gray  Fine  Sediments	□ Non □ Milk □ Non	e  c e c e c e c e c e c e c e c c e c c e c	Othe Othe Othe	er er er
Water Ch Odor: Color: Bottom Deposit: Surface Deposit: Comments: This information compressions and a	aracteristics*:  □ Sewa □ Clear □ Sludg □ Oil  : Please attach ation is not to be ehensive under decision on the	(Mark a ge ge a addition be used s standing	Il that apply.    Musky   Green   Solids     Scum   Scum	Chemical  ☐ Chemical  ☐ Gray  ☐ Fine  Sediments  ☐ Foam	Non Non Non Ct recreans inform	e   e   minterview  tion but ra  mation is no	Other Other of the other is to tinten	er er his form. to provide ded to dire
Water Ch Odor: Color: Bottom Deposit: Surface Deposit: Comments: This informatione compressional properties of the compressional properties of the under latasheet in	aracteristics*:  □ Sewa □ Clear □ Sludg □ Oil  : Please attach ation is not to be ehensive under decision on the er use.  rsigned, hereby s true and acc	(Mark a ge se standing recreation y affirm urate.	Il that apply.    Musky     Green     Solids     Scum     Onal comment of water conduction use analysis     to the best of the best of the second conduction of the second	Chemical Che	Non	e	Other Other other other analysis	er er his form. to provide a ded to dire lysis or tha

## **Stream Morphology & Discharge Measurements**

Project Name/Number: MSD - River des Reves

Date/Time: 1920 1920

Site/Transect ID Number: T-5 # 160

			<u> 1400 -                                    </u>	-					End Time:	1415	
	Measured	by: <u>///</u>	ni Kri				_		eather Cond:		
				Stream N	<b>Norphol</b>	ogy Betwe	en Trans	ects			
			Length of Poo	ls	···	Length of Ru	n	L	ength of Riffl	les	
		•	Start GPS						Start GPS		]
	#	ft.	#	End GPS #	ft.	Start GPS #	End GPS #	ft.	#	End GPS #	
	2					<del> </del>	<del>                                     </del>				
	3				<del></del>		<u> </u>				
	1			, <del></del>	<del> </del>	+	<del>                                     </del>				
	5	-	+		<del></del>	<del> </del>	<b></b>		-		
	6		+			<del> </del>			4		
İ	7		+			-	<del> </del>				
	8		+				<del>                                     </del>		+		
	9		+		<u> </u>	+					
	10		+			+			+		
	11					<del>                                     </del>			++		
	12			-				<del></del>	+		
	13				<u> </u>	+		<del></del>	<del>                                     </del>		
	14					<del> </del>			++		İ
	15					1			+		ı
(0.4	LDB Angle: <u> </u>	. "		RDB Angle: _ イスラール ヴ	27% 15		Secchi (ft)			idity (NTU):	
Channel	Comp (%):		Cobble _	5	Gravei	50	Sand _	35	_ Silt_		
Bank Co	ompostion	Fle	Other	10 Con	10000000000000000000000000000000000000	1.50	9				
	Corridor Dens		Width of Ripa	arian Area:							
General	l Observations	:									
						arge Meası	ırements				
	nning Stage			Ending S	Stage:				Total Q:		
	Channel Widtl				Area:			Averag	ge Velocity:		
	Distance from			<del></del>	Start:				End:		
	meas. type	e: Price	AA Pygmy	Data Coll.	Type: Agu:	a Calc Sheet	A	gua Calc Ti	ransect #:		

					Stre	am Di	scha	rge Meas	uremen	<u>ıts</u>			- <del></del>	
Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	Width	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	Vel		ity (f/s) Mean in Ver- tical	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cfs
	1 (EOW)		0	0	0,1	0	0	0		0	0	<u> </u>		
				4.0										
				8.0				•						
				12.0	a-									
				16,0	0.2									<u> </u>
				20,0	0.7									
				24.0	0.5									
		<u> </u>		280	0,8									
				32,0	0.6		<u> </u>						<u> </u>	
		<u> </u>		36,0	1,0									
		<u> </u>		40.0	0,6									
		<b>_</b>		44.0	0,6									
	EOW	_		45.0										
		<u> </u>	_	124					ļ			<b>.</b>	_	ļ
		<u> </u>		128	0,6		<b> </b>							
		<u> </u>		132	0,6		<u> </u>		<b>_</b>					
		ļ		136	0.4							ļ		
				140	0,3		ļ				ļ			
		_		144	0,2							<b>.</b>		ļ
	EOW			147.3	0_		ļ							
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Dame:										A	qua Calc D	scharge	):	
Rema	rks:			<del></del>										
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### Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: w	classified		Site Location Desc	cription:	
Site Lat/Long: # 161(	0735712/42717	(z)		des Peras	
Date & Time: 10/2010	4 1425	-7	Facility Name:	CSFCVE	
Personnel: NM/RM			Permit Number:		
Current Weather Conc	litions: overcas-	+	Weather Conditio	ns for Past 7 days:	Doeccast
Photo Ids: Upstream	: Down	stre	am:	Other: plutos 20	
Used Observed*:				7	, ,
☐ Swimming	☐ Skin Diving		SCUBA diving	☐ Tubing	☐ Water Skiing
☐ Wind surfing	☐ Kayaking		Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping		Fishing	X None of the above	Other
Describe: (include num	ber of individuals	recr	eating, frequency of	of use photo-documo	ntation of
evidence of recreation	al uses, etc.		<i>Bi</i> = sq = 100 (100)	or ase, prioce accurre	intation of
	,				
Commercial Control	<b></b>				
Surrounding Condition	ons*: (Mark all that p	rom	ote or impede recre	ational uses. Attach pho	otos of evidence or
unusual items of interest.)		T			
☐ City/county parks	☐ Playgrounds		MDC conservation	n X Urban areas	□ Campgrounds
			lands		
☐ Boating accesses	☐ State parks		National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	X	Steep slopes	☐ Other:	
<b>-</b>					
Evidence of Human U	se*:				
X Roads	☐ Foot		☐ Dock/platform	n 🗆 Livestock	
	□ FOOt			I I □ LIVESTOCK	RVIATV Tracks
	paths/prints	ŝ	Dockipiation	1	RV/ATV Tracks
☐ Rope swings	paths/print			Watering	
			☐ Fire pit/ring	Watering  NPDES	RV/ATV Tracks  □ Fishing Tackle
☐ Rope swings	paths/print			Watering	
	paths/print			Watering  NPDES	

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

#### Page Two – Data Sheet B for WBID #:

<b>X</b> Riffle	Width(ft)	201	Length(ft)	200 Ave. Depth(ft)	O. 60 Max	. Depth(ft) <i>[</i>	0.75
□ Run	Width(ft)		Length(ft)	Ave. Depth(ft)		Depth(ft)	
□ Pool	Width(ft)		Length(ft)	Ave. Depth(ft)	Max.	Depth(ft)	
<b>K</b> Flow	Present?	Yés	No	Estimated (ft³/	sec): O.	8	
Downstream	n View Physic	cal Dim	ensions:				
□ Riffle	Width(ft)		Length(ft)	Ave. Depth(ft)	<del></del>	. Depth(ft)	
<b>X</b> Run	Width(ft)			A00' Ave. Depth(ft)	0.65'Max		0.85
💢 Pool	Width(ft)		Length(ft)		0. 25' Max.	Depth(ft)	0.35
<b>▼</b> Flow	Present?	Tes	No	Estimated (ft³/	sec):	0	
Aquatic Ve	getation*: (no	%Grav	ount of veget	ation or algal growth	n at the assessi	ment site)	ioncrete Sautin
machiled,	getation*: (no Bullruśli, ki	ote am	ount of veget	s , Very little algoe	n at the assessi on Subshate,	ment site)	
Water Cha	getation*: (no Bullruśli, ki racteristics*:	ote ame Allows (Mark a	ount of veget	s , Very little algoe	at the assessing on Substrate,	ment site)	
Comustweed,  Water Chair  Odor:	getation*: (no Bullruśli, ki	ote ame Allows (Mark a	ount of veget  on gravel ba	r , Very little vilgor	en Substrate,	nent site) allocthono	
Water Char Odor: Color: Bottom	getation*: (no Bullrush, ke racteristics*:	ote amo Villows (Mark a	ount of veget  on gravel ba  ill that apply.)  Musky	s, Very little algor  □ Chemical  □ XGray  X Fine	on Substrate,  □ None	ment site)  Alloc Honor	
Water Char Odor: Color: Bottom Deposit:	getation*: (no Bullrush, K racteristics*: Sewag	ote amo Villows (Mark a	ount of veget  on gravel ba  Ill that apply.)  Musky  Green	Chemical  Chemical  Chemical  Chemical  Chemical  Chemical  Chemical  Chemical  Chemical  Chemical	□ None □ Milky □ None	nent site)  Alforthonous  Other  Other  Hillorthonous	os poitive
machiled,	getation*: (no Bullrush, K racteristics*: Sewag	ote amo Villows (Mark a	ount of veget  on gravel ba  Ill that apply.)  Musky  Green	s, Very little algor  □ Chemical  □ XGray  X Fine	□ None □ Milky	ment site)  Alloc Honor  Other  Other	os poitive
Water Char Odor: Color: Bottom Deposit: Surface Deposit:	getation*: (no Bullrush, Karacteristics*:  Sewage Clear Sludge	ote ame Villows (Mark a ge	ount of veget  on gravel ba  Ill that apply.)  Musky  Green  Solids	Chemical  Chemical  Chemical  Chemical  Chemical  Chemical  Chemical  Chemical  Chemical  Chemical	□ None □ Milky □ None	□ Other □ Other   Hilly thorous	os poterio poctan
Water Char Odor: Color: Bottom Deposit: Surface Deposit: Comments: I	getation*: (not)  Bullrush, Karacteristics*:  Sewage Clear Sludge Oil  Please attach ion is not to be densive understation on the re-	ote amo	ount of veget  on gravel ba  Ill that apply.)  Musky  Green  Solids  Scum  onal comment  olely for remove of water cond	Chemical  Chemical  CGray  Xine  Sediments  □ Foam	None  None  None  None  None  None	Other Other Other Other Other Other rviews) to this	s form.
Water Char Odor: Color: Bottom Deposit: Surface Deposit: Comments: I This informat nore compreh offluence a dec offect another	getation*: (not Bullrush, Kuracteristics*:  Sewage Sclear Sludge Oil  Please attach ion is not to be be sisted on the relation on the relation on the relation of the second of the seco	ote amondalista de used standing ecreation affirm urate.	ount of veget  on gravel bar  all that apply.)  Musky  Green  Solids  Scum  onal comment  olely for remove of water cond on use analysis  to the best of	Chemical Chemical Consequents Consequently, t	None    None   Milky   None    Mone   Mone   Mone   Mone	nent site)  alloc fhonos  Other Other Other  Mother Other  Alloc fhonos  other  Alloc fhonos  other  other  other  other	s form.  provide a ed to direct sis or that

#### Stream Morphology & Discharge Measurements

Project Name/Number: MSD - King, In Peras Date/Time: <u>///po/69</u> ///31 Site/Transect ID Number: T-6 /6/# Start Time: 1425 End Time: 1445 Measured by: RM/NIII Air Temp: 2000 Weather Cond: Described Stream Morphology Between Transects Length of Pools Length of Run Length of Riffles Start GPS Start GPS ft. # End GPS # Start GPS # End GPS # End GPS # 1 1500 160# 1.00 1600 5 6 7 8 9 10 11 12 13 14 15 Stream Morphology At Transect LDB Angle: RDB Angle: Secchi (ft) Turbidity (NTU):

Channel Comp (%):		10 Gra	vel <u>30</u>	Sand_	50	Silt
Bank Compostion		And Court	Burnets y	719 -	nent	
liparian Corridor Density	: Width of Ri	parian Area:	and the second s			
	Compostio	n of Riparian Vegitatio	on:			
General Observations:	OBridge O Jenglh : D',	In from in	, Several , 0.3'	ryples on	ig in w	ion Sweeting
		Stream Disc	harge Meası	ırements		
Beginning Stage		Ending Stage:	•			Total Q:
Channel Width:		Total Area:			Average V	
Distance from Da	tum to Water Surfa	ce: Start:			siago v	End:
Meas. type:	Price AA Pygmy	Data Coll. Type: A	qua Calc Sheet	Ao	ua Calc Trans	

Aqua Calc Transect #:

					Strea	am Dis	scha	rge Meas	urements	3			
					1				Veloc	ity (f/s)	ï.		
Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	Width	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	At Point	Mean in Ver- tical	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cfs)
	1 (EOW)		0	0.0	0.2	0	0	0	0	0			
				4,0	0,6								
				8.0	28								
				12.0	0.8								
				110.0	O <sub>I</sub> S								
				30.0	0.85								
				ĝu,c	0.7								
				ફેફ ,ે	0.65							<u> </u>	
				?}.€	0.16								
	-			3/4.17	0.3								
	6.060			5/28	0								
				114,4	0								
				118.4	0.03								
				1800 m	2.73								
				1760	0.4								
				130,4	0.3								
				104.4	0,3								
				13814	0,3								
				147.4	0130								
				146,4	2,15								
	EOW			147,7	0								
									Lo	g Sheet Tot	als:		
									Sheet C	alculated D	ischarge		
									Α	qua Calc D	ischarge		
Remar	ks:												



#### Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #:									
	nelassified	Site Location De	Site Location Description:						
Site Lat/Long: #/62	0735921/42715	49) T-7 Rwes ,	des Peres						
Date & Time: 10/20/0	1500	Facility Name:							
Personnel: Pm/Nm		Permit Number:							
Current Weather Conc	litions: overcast	Weather Conditi	ons for Past 7 days: 0	verent					
Photo Ids: Upstream		stream:	am: Other: plutos 27-29						
Used Observed*:			7000-						
☐ Swimming	☐ Skin Diving	☐ SCUBA diving	☐ Tubing	☐ Water Skiing					
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting					
☐ Hunting	☐ Trapping	☐ Fishing	X None of the above	Other					
Describe: (include num	ber of individuals i	recreating, frequency	of use, photo-docume	ntation of					
evidence of recreation	al uses, etc.	, and an analysis	or use, prioto docume	Titation of					
	·								
			1444						
c 1: c 1:	d. /								
Surrounding Condition	<b>ns*:</b> (Mark all that p	romote or impede recr	eational uses. Attach pho	otos of evidence or					
unusual items of interest.)		Ţ-							
City/county parks	☐ Playgrounds	☐ MDC conservati	ion 💢 Urban areas						
		lands	ľ	☐ Campgrounds					
☐ Boating accesses		iditas		☐ Campgrounds					
	☐ State parks	☐ National forests	□ Nature trails	8					
☐ No trespass sign	☐ State parks☐ Fence		□ Nature trails □ Other:	8					
□ No trespass sign	☐ Fence	☐ National forests		18.					
	☐ Fence	☐ National forests		18.					
□ No trespass sign  Evidence of Human U	☐ Fence	☐ National forests  ★ Steep slopes	☐ Other:	□ Stairs/walkway					
□ No trespass sign	☐ Fence se*: ☐ Foot	□ National forests  ★ Steep slopes  □ Dock/platfor	☐ Other:	18.					
□ No trespass sign  Evidence of Human U  XRoads	☐ Fence  se*: ☐ Foot paths/prints	□ National forests  ★ Steep slopes  □ Dock/platfor	Other:  The Divestock Watering	☐ Stairs/walkway  RV/ATV Tracks					
□ No trespass sign  Evidence of Human U	☐ Fence  se*: ☐ Foot	□ National forests  ★ Steep slopes  □ Dock/platfor	Other:    Divestock   Watering   NPDES	□ Stairs/walkway					
□ No trespass sign  Evidence of Human U  Roads  Rope swings	☐ Fence  se*: ☐ Foot paths/prints	□ National forests  ★ Steep slopes  □ Dock/platfor	Other:  The Divestock Watering	☐ Stairs/walkway  RV/ATV Tracks					
□ No trespass sign  Evidence of Human U  Roads  Rope swings  XOther:	Fence  se*:    Foot   paths/prints   Camping Site	□ National forests  ★ Steep slopes  □ Dock/platfor	Other:    Divestock   Watering   NPDES	☐ Stairs/walkway  RV/ATV Tracks					
□ No trespass sign  Evidence of Human U  Roads  Rope swings	Fence  se*:    Foot   paths/prints   Camping Site	□ National forests  ★ Steep slopes  □ Dock/platfor	Other:  The Divestock Watering Discharge	☐ Stairs/walkway  RV/ATV Tracks					

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

,	ew Physical Dime Width(ft) /6		ので Ave. Depth(ft)	0.4 Max.	Depth(ft)	0.8
	Width(ft)	Length(ft)	Ave. Depth(ft)	Max.	Depth(ft)	
	Width(ft)	Length(ft)	Ave. Depth(ft)	Max.	Depth(ft)	
<b>X</b> Flow	Present? (Yé	s) No	Estimated (ft³/s	sec): 0.3	5	
Downstream	n View Physical Di	mensions:				
-	Width(ft) /6 '	Length(ft)	20' Ave. Depth(ft)	0.2 Max.	Depth(ft)	0.5
<b>X</b> Run	Width(ft) 16	Length(ft)	<b>⊘</b> ′ Ave. Depth(ft)	0. 4 Max.	Depth(ft)	0.8
Pool	Width(ft)	Length(ft)	Ave. Depth(ft)	Max.	Depth(ft)	
XELOW	Present? Ye	S) No	Estimated (ft³/s	sec): <i>Q</i> ,	7	
Substrate*:	(These values show			— %Mud/Cl	ay 5 9	%Bedrock
						Concrete
Aquatic Veg	getation*: (note ar	nount of vegetat	ion or algal growth	at the assessn	nent site)	
willows, sm	nactureed along	RUB & LDB, gu	ard barin river	- little to	no algae	on Subst
	acteristics*: (Mark			,		
Odor:	★ Sewage  ①	₩ Musky	☐ Chemical	□ None	☐ Othe	ſ
olor:	✓ Clear	☐ Green	<b>⊠</b> Gray	□ Milky	☐ Othe	r
20101.		la cuita	<b>IX</b> Fine	□ None	☐ Othe	
Bottom	☐ Sludge	☐ Solids	*	- Home		
Bottom Deposit:	☐ Sludge	☐ Solids	sediments			
Bottom Deposit: Surface	☐ Sludge ☐ Oil	☐ Scum	*	None	☐ Othe	
Bottom Deposit: Surface Deposit:	Oil	☐ Scum	sediments  □ Foam	XNone	☐ Othe	r
Bottom Deposit: Surface Deposit:	Oil	☐ Scum	sediments	XNone	☐ Othe	r
Bottom Deposit: Gurface Deposit: Deposi	Oil  wing Station lease attach addition is not to be used	Scum  Photo # 26,00 ional comments  solely for remova	sediments  □ Foam	None Moder riving states riving states riving the states of the states o	Other Deal.  views) to the trather is to	is form.
Bottom Deposit: Depos	Oil  on is not to be used ensive understanding is in the recreat	Scum  Photo # 36, 00 ional comments  solely for remova g of water conditi	sediments    Foam   Flaw   Flaw   (including information of whole body contains)	None None None ion from interior ct recreation but his information	Other Other	is form. provide a ed to directly
Bottom Deposit: Depos	Oil  w.mp Station lease attach addit on is not to be used ensive understandin ision on the recreat use.	Scum  Photo 4 36, 00 ional comments  solely for remova g of water condition use analysis but	sediments  Foam  Ffall Pipe Flace (including informat) of whole body conta	None None Sion from interest recreation but his information tions that need to	Other Decl. views) to the trather is to is not intendefurther analy	r is form.  provide a ed to directly sis or that
Bottom Deposit: Depos	Oil  Oil  Oil  Oil  Oil  Oil  Oil  Oil	Scum  Photo # 26, 00 ional comments solely for remova g of water conditi ion use analysis bu	sediments  Foam  Ffuli Pipe Flower  (including informate)  I of whole body contations. Consequently, the conditions in the conditions of t	None None riving and expression from interest of the control of th	Other Jeal.  views) to the strather is to is not intendefurther analy	is form. provide a ed to directly sis or that

### **Stream Morphology & Discharge Measurements**

Project Name/Number: MSD - River des Perer Date/Time: 19/20/04 1500 Site/Transect ID Number: T-7 1/62\*

			): <i></i>	-	-					End Time:	1515	
	Measu	red by	: <u> </u>	1/Nm	. Air	Temp:	50 °F		Wea		Molla	
					Stream N	orpholo	gy Betwe	en Trans	sects			
<i>L</i>			L	ength of Poo			Length of Ru			ngth of Riff	les	
				Start GPS						Start GPS		
]		#	ft.	#	End GPS #	ft.	Start GPS #	End GPS #	ft.	#	End GPS #	
	LDE	1		500					LIB 100'	500		
		2										
		3				<del></del>						; 
		4							! 			
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		6										
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	15											
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	LDD A	_		_			nology At					
	LDB Angle	:		. F	RDB Angle: _		;	Secchi (ft)		Turb	oidity (NTU): _	
Channol	Comp (9/)			Cabble	15		3.0			···		
Onamic	Comp (70).	•		Copple _	/ 3	Gravel	50	Sand _	50	Silt_		
·				Other	5 (a)	ocaete						
Bank C	ompostion	<u> </u>	+ Y11	orap (	rement	2						
			·									
Riparian	Corridor D	ensity	<b>/</b> :	Width of Rip	arian Area:_				T			
				Compostion	of Riparian \	/egitation:						
Genera	l Observati	ons:										-
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							rge Meası	ırements				
Begi	inning Stag			<del></del>	Ending S					Total Q:		
	Channel W	-		184.4. 5. 6	Total		·		Average	Velocity: _		
				Water Surfac		Start:	0.1.0			End:		
	Meas.	type:	Price .	AA Pygmy	Data Coll.	Type: Aqua	Calc Sheet		Aqua Calc Tra	insect #:		

					Strea	am Di	scha	rge Meas	suremen	ts			
	[							·	Velo	city (f/s)	ä		
Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	Width	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	At Point	Mean in Ver- tical	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cfs
	1 (EOW)		0	0	0	0	0	0		0 0			
				4.2 8.0	0.4				<u> </u>				
					0.4				<u></u>				
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	EAL	-		28.0	0.1 0	-				_	<del> </del>	<del></del>	
	EOW	$\vdash$	<u> </u>	139.2	0						<del> </del>		
		$\vdash$		143,2	0	<del>                                     </del>	$\vdash$		<u> </u>	_	1		
		+	-	147.7	0.1			-				<del>-  </del>	
	<del> </del>	† —		147.2	0.2								
	Exw	1		152	0								
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										Calculated D			
			<u>+-21</u>		. / * */	. ,	-		<del></del>	Aqua Calc D	ischarge	<del>)</del> :	
Remai	KS.	/	JR 141.	10/2 31	_ L D.C.	<del>/ !</del>	<u> </u>	<u> </u>		1181 000			
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										<del></del>			· · · · · · · · · · · · · · · · · · ·

110 29

#### Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: im	classified		Site Location Des	crit	otion:	
Site Lat/Long: #16多(0	736227/4271562	)			es Peves	
Date & Time: 10/20/04	1525		Facility Name:		JINES	
Personnel: RMINM			Permit Number:	*		
Current Weather Cond	itions: Overcust		Weather Conditio	ns	for Past 7 days: 10	vercant
Photo Ids: Upstream	: Down	stre			Other: plutoes ?	26-37 20-24
Used Observed*:						Em 33
☐ Swimming	☐ Skin Diving		SCUBA diving		Tubing	☐ Water Skiing
☐ Wind surfing	☐ Kayaking		Boating		Wading	☐ Rafting
☐ Hunting	☐ Trapping		Fishing	<b>X</b>	None of the above	□ Other
Describe: (include num	ber of individuals		reating, frequency	of L	use, photo-docume	ntation of
evidence of recreation:	al uses, etc.		3, I 3		, p.,,,,,,,,,	
Comment to Control	<b></b> /					
Surrounding Condition	<b>ons*:</b> (Mark all that p	oron	note or impede recre	atio	onal uses. Attach pho	otos of evidence or
unusual items of interest.)						
□ City/county parks	☐ Playgrounds		MDC conservation	on	Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks		National forests		☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	×	Steep slopes		☐ Other:	
Evidence of Human U	ce*·			*****		
Roads	□ Foot					V
	paths/print	S	□ Dock/platforn	n	☐ Livestock Watering	■ RV/ATV Tracks
☐ Rope swings	☐ Camping Si	tes	☐ Fire pit/ring		☐ NPDES	☐ Fishing Tackle
					Discharge	
Other: Pan Disc	hause pipes					

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

□ Riffle Width(ft) Length(ft) Ave. Depth(ft) Max. Depth(ft) □ Run Width(ft) Length(ft) Ave. Depth(ft) Max. Depth(ft)  ▼ Pool Width(ft) At5' Length(ft) ★ Ave. Depth(ft) ♠ Ave.
No   Width(ft)   Ats   Length(ft)   DO   Ave. Depth(ft)   Do   B   Max. Depth(ft)   I. Depth(f
Downstream View Physical Dimensions:    Riffle
Downstream View Physical Dimensions:    Riffle
Riffle Width(ft) 45' Length(ft) 50' Ave. Depth(ft) 0,95 Max. Depth(ft) 1,3  Run Width(ft) Length(ft) Ave. Depth(ft) Max. Depth(ft)  Pool Width(ft) Length(ft) Ave. Depth(ft) Max. Depth(ft)  Flow Present? Yes No Estimated (ft³/sec):  Substrate*: (These values should add up to 100%)  15 %Cobble 30 %Gravel 50 %Sand —%Silt — %Mud/Clay 5 %Bedrock Consett  Aquatic Vegetation*: (note amount of vegetation or algal growth at the assessment site)  Willows, Billrush, Smarked along Gravel bed, LBB/RB, No algae on Subskate  Water Characteristics*: (Mark all that apply.)  Odor:   Sewage Musky Chemical None Other
Riffle Width(ft) 45' Length(ft) 50' Ave. Depth(ft) 0,95 Max. Depth(ft) 1,3  Run Width(ft) Length(ft) Ave. Depth(ft) Max. Depth(ft)  Pool Width(ft) Length(ft) Ave. Depth(ft) Max. Depth(ft)  Flow Present? Yes No Estimated (ft³/sec):  Substrate*: (These values should add up to 100%)  15 %Cobble 30 %Gravel 50 %Sand —%Silt — %Mud/Clay 5 %Bedrock Consett  Aquatic Vegetation*: (note amount of vegetation or algal growth at the assessment site)  Willows, Billrush, Smarked along Gravel bed, LBB/RB, No algae on Subskate  Water Characteristics*: (Mark all that apply.)  Odor:   Sewage Musky Chemical None Other
Pool Width(ft) Length(ft) Ave. Depth(ft) Max. Depth(ft)     Flow Present? Yes No Estimated (ft³/sec): /1.0   Substrate*: (These values should add up to 100%)     15 %Cobble   30 %Gravel   50 %Sand   —%Silt   — %Mud/Clay   5 %Bedrock     Concrete     Aquatic Vegetation*: (note amount of vegetation or algal growth at the assessment site)     Willows, Billrush, Amachiced along growel bed, LNB/ROB, No algae on Substrate     Water Characteristics*: (Mark all that apply.)     Odor:   Sewage   Musky   Chemical   None   Other
Substrate*: (These values should add up to 100%)  15 %Cobble 30 %Gravel 50 %Sand —%Silt — %Mud/Clay 5 %Bedrock Concrete  Aquatic Vegetation*: (note amount of vegetation or algal growth at the assessment site)  Water Characteristics*: (Mark all that apply.)  Odor:   Sewage   Musky  Chemical  None  Other
Substrate*: (These values should add up to 100%)  15 %Cobble 30 %Gravel 50 %Sand —%Silt — %Mud/Clay 5 %Bedrock  Concrete  Aquatic Vegetation*: (note amount of vegetation or algal growth at the assessment site)  Willows, BUIrush, Smachused along growel bed, LBB/RBB, No algae on Substitute  Water Characteristics*: (Mark all that apply.)  Odor:   Sewage   Musky  Chemical  None  Other
15 %Cobble   30 %Gravel   50 %Sand   —%Silt   — %Mud/Clay   5 %Bedrock   Concrete
Water Characteristics*: (Mark all that apply.)  Odor:   Sewage   Musky   Chemical   No algae on Substrate  Whone   Other
Color: Clear Green Gray Milky U Other
Bottom ☐ Sludge ☐ Solids ☐ Fine ☐ None ☐ Other  Deposit: sediments
Surface ☐ Oil ☐ Scum ☐ Foam ☑ None ☐ Other Deposit:
Comments: Please attach additional comments (including information from interviews) to this form.  *This information is not to be used solely for removal of whole body contact recreation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.
I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.
Organization: Med Water Resources Position: Environmental Specialist

### **Stream Morphology & Discharge Measurements**

Project Name/Number: <u>IIISU- River des Peris</u>

Date/Time: <u>10 20 20 11520</u>

Site/Transect ID Number: <u>163 7-8</u>

	Start Time	e: <u>/525</u>						End Time:	: 1540	
Me	asured by	y: <u>PM (Nm</u>	Aiı	r Temp:	50°F	-	1	Weather Cond:	: <u>J377</u> 7.	ast -
			Stream N	<b>N</b> orphol	ogy Betwe	en Trans	sects			
	<del></del>	Length of Po			Length of Rui	i <b>n</b>		Length of Riff	fles	
		Start GPS	1 .					Start GPS		]
I	#	ft. #	End GPS #	ft.	Start GPS #	End GPS#	ft.	#	End GPS #	
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l <u> </u>	5				1		<del>                                     </del>		<del>                                     </del>	
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	12		+	<del></del>	<del></del>	<b>—</b>	<u> </u>		<b></b> J	İ
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			Strea	ım Morp	hology At	. Transec	t			
LDB A	ngle:		RDB Angle: _			Secchi (ft)		Turb	bidity (NTU): _	
Channel Comp	. /%\.	Cobble	15		30		50		<del></del>	
		Copple		Grave	<u> </u>	Sand -	$\frac{\mathcal{I}}{\mathcal{I}}$	Silt_		
	·- ·	Other Flad Fig	5 Cone	2107e						
Bank Compos	ition	Flat ri	p MAP,	Cino C	to men	au				
			/		(					
Riparian Corrid	dor Densit	ty: Width of R	iparian Area:							
			on of Riparian							
		Composito	п от ктрапан	vegitation:		<del></del>				
Camaral Ohaa	/	<del>2</del> 1/ /00	/ /	7. 2.22				<del></del>		
General Obse	rvations:(	(D) A1 600'	A Care	£ 1 1	LOChaine!	1023/2	<u> </u>	12 516.		-
			Strea	m Disch	araa Maaa			<del></del>		
Beginning	anet?		Stream Ending S	•	arge Meası	ırements	-			
	owye nel Width:	, <del></del>	-					Total Q: _		
		· Datum to Water Surfa	-	l Area: Start:			Aver	rage Velocity: _		
	eas. type:				Cala Chaot			End:		
171	eas. type.	Price AA Pyginy	Data Con.	Type: Aqu	ıa Calc Sheet	•	Aqua Caic	: Transect #:		

					Oli Ci		30110	ngo mou	uremen	ocity (f/s)			
Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	Width	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	At Point	Mean in Ver-	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cf
	1 (EOW)	<b>†</b>	0	72-	0	0	0	0		0 0			
				76	0,05								
				80	0.05								
				94	10.7								
				95	0.2		ļ						
				92	1.27								
				96	9.7 0.8	ļ	ļ				<del> </del>	<del>                                      </del>	
		<u> </u>		122	0.8						<b> </b>	<del> </del>	
		1		104	0,00		ļ		<b></b>				
	ļ			108	1,0	<b></b>	1		<u> </u>		<u> </u>		
				773	1,0		<u> </u>				<b></b>		
		<b> </b>		116	1.2				ļ		<u> </u>		
		ļ —		120	1,2	ļ	-		<del> </del>		-		
		╄		124	1,0		┢			<del>.  </del>	<b>_</b>		
. —		┼	ļ	128	0,65		-				<u> </u>		<u> </u>
	EOW	+	ļ	130	0		-		<u> </u>		<u> </u>	_	
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										Aqua Calc D	_		
Remai	rks:						-			,			

#### Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

C'1 1 11 11 11 11 11	nelessified		Site Location Desc	ription:		
Site Lat/Long: #/64/	0736564/4271570		T-9 River des			
Date & Time: 10/20/0	4 1545		Facility Name:	18/13	·	
Personnel: Rm / NM	•		Permit Number:			
Current Weather Cond	litions: Overcast		Weather Condition	ns for Past 7 days:	Do	reicast
Photo Ids: Upstream		strea	am:	Other: photos	2,5	- 38 pm
Used Observed*:				pro-	34	4-37
☐ Swimming	☐ Skin Diving		SCUBA diving	 □ Tubing		☐ Water Skiing
☐ Wind surfing	☐ Kayaking	<del></del>		□ Wading		
☐ Hunting	☐ Trapping			None of the abo		☐ Rafting ☐ Other
Describe: (include num		recre	eating frequency	fuce photo docum	ve	U Other
		_			hotos	
Surrounding Condition in the second state of the second se	ons*: (Mark all that p	prom	·		hotos	
nusual items of interest.)		_	MDC conservatio		hotos	Campgrounds
inusual items of interest.) □ City/county parks	□ Playgrounds		MDC conservatio	n Urban areas		Campgrounds
Inusual items of interest.) ☐ City/county parks ☐ Boating accesses	☐ Playgrounds ☐ State parks ☐ Fence		MDC conservatio lands National forests	n		Campgrounds
□ Boating accesses □ No trespass sign	☐ Playgrounds ☐ State parks ☐ Fence		MDC conservatio lands National forests	Urban areas  Nature trails Other:		Campgrounds Stairs/walkway
□ Boating accesses □ No trespass sign  Evidence of Human U	☐ Playgrounds ☐ State parks ☐ Fence   ☐ Jse*: ☐ Foot	□ □ ★	MDC conservatio lands National forests Steep slopes	Urban areas  Nature trails Other:		Campgrounds

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

□ Riffle	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. [	epth(ft)
Run	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. D	epth(ft)
Pool		(C) Length(ft)	75 Ave. Depth(ft)	/,/ Max. D	epth(ft) 2.0
☐ Flow	Present?	Yes No	Estimated (ft³/s	sec):	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Downstre	am View Physical	Dimensions:			
Riffle	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. [	Pepth(ft)
Run	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. D	epth(ft)
Pool	Width(ft)	ے (Length(ft	Ave. Depth(ft)	1.0 Max. D	epth(ft) ノ, 3
] Flow		Yes (No)	Estimated (ft³/s	sec):	
No al		ite, irllows,	ation or algal growth Smarkweed Along y		
Odor:	☐ Sewage	☐ Musky	☐ Chemical	None	□ Other
Color:	□ <b>X</b> Clear	☐ Green	Ø Gray	□ Milky	□ Other
20101.			Deline	□ None	C 011
Bottom	☐ Sludge	☐ Solids	Fine sediments	None	☐ Other
Bottom Deposit: Surface Deposit:	☐ Sludge	☐ Solids ☐ Scum	1 / -	None	☐ Other

## Stream Morphology & Discharge Measurements

ŀ	Start Time: /545								End Time:	1600	7
	Measured	by: <u>/////</u>	Mrr.	. Air	Temp:	52°F	-	We	eather Cond:		
				Stream N	/lorphole	ogy Betwe	en Trans	ects			
		L	ength of Poo	ıls		Length of Ru	n	L	ength of Riffl	les	
			Start GPS						Start GPS		
	#	ft.	#	End GPS #	ft.	Start GPS #	End GPS #	ft.	#	End GPS#	
	1			<b></b>	<del> </del>		<u> </u>				
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	3	<del></del>	-		<del></del>						
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t	11		+			<del> </del>	<del></del>				
	12		+				<del></del>	<del> </del>	-		
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•	LDD Aligie			RDB Angle: _	_	-	Secchi (ft) _		_ Turb	idity (NTU): _	
Channel	Comp (%):		Cobble	20	Gravel	30	Sand_	30	Silt		
			Other	20 Cerc	rete	te com			-		
Bank Co	ompostion	F	lad rip	Val	Buckey	1. 1.4.	11.				
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Riparian	Corridor Ďens	eitv.	Width of Rip	arian Area:			<del></del>				
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			Compostion	of Riparian	Vegitation:					· · · · · · · · · · · · · · · · · · ·	
Conoro	l Observations										
General	l Observations	š:	<del></del>								
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				Strea	m Disch:	arge Meası	iromente				
Begi	nning Stage					urge meast	i ements		Total Q:		
	Channel Widt				Area:			Averan	je Velocity:	<del></del>	
	Distance from		Water Surfac		Start:			, .vo.ag	End:		
	Meas. typ		AA Pygmy			a Calc Sheet	Α	gua Calc Tr			

	Τ	T 1					T	rge Meas	Velo	city (f/s)			
Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	Width	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	At Point	Mean in Ver-	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cf
	1 (EOW)		0	2,5	0.87	0	0	0	(	0 0			
				3.1	1,03								
				6.5	1.1			-					
				8,5	0.74								
				9,5	0.3								ļ
	EDW			11,0	0								
				63,0	0_	ļ	_			-			
	ļ <u>.</u>			68.0	0.6	ļ							
				73.0	1,0%								
		<u> </u>	-	78.0	1.6				-				
	<u> </u>	<b>↓</b>		83.0	2.0	ļ	-						
		-		35.2	1,3								
		-		98.0	0.6	<del>                                     </del>	-						
	<del> </del>	+		103.0	0.35	<del>                                     </del>				<del></del>		<del>                                     </del>	
		+		102.0	0.25							-	
		<u>†</u>		113	0.6								
		1	-	1117	0.3	<u> </u>							
	<del>                                     </del>			17.9	0.2								
		<del> </del>		125	2.4								
		<u> </u>		133	0,7								
				135	0.7								
				143	0.65								
				100	0,60								
				**;*	0.5								
·				156	0.5								
	E. Cw	ļ		158	2								
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#### Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #:	711	Т	Cita Lagation D	<del></del>		
Site Lat/Long: #165			Site Location Des			
Date & Time: 10/20/0	4 1670	ا کت	T-10 Diver des	× 1	leves	
Personnel: pm/wm	9 1620		Facility Name:			
Current Weather Cond	itions: Aug A		Permit Number:		C D : 1	
Photo Ids: Upstream:			vveather Conditio	ns	for Past 7 days: 10	vercat
There ias. Opstream.	DOWII	SLIE	am.		Other: plistor 38	47
Used Observed*:						
☐ Swimming	☐ Skin Diving		SCUBA diving		Tubing	☐ Water Skiing
☐ Wind surfing	☐ Kayaking		Boating			☐ Rafting
☐ Hunting	☐ Trapping		Fishing	<u>-</u>	None of the above	
Describe: (include num	ber of individuals	recr	eating, frequency	of	use, photo-docume	ntation of
evidence of recreations	al uses, etc.		8, 4		are, prioto documen	1000000
Commence House Control	<b></b>					
Surrounding Conditio	<b>ns*:</b> (Mark all that p	rom	ote or impede recre	atio	onal uses. Attach pho	tos of evidence or
unusual items of interest.)		Т			<del></del>	
☐ City/county parks	☐ Playgrounds		MDC conservation	on	<b>✗</b> Urban areas	□ Campgrounds
☐ Boating accesses	☐ State parks		lands			
	= Butte parks		National forests		☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence		Steep slopes		☐ Other:	
Evidence of Human Us	se <b>*</b> :					
<b>X</b> Roads	□ Foot		☐ Dock/platforn	— n	☐ Livestock	☐ RV/ATV Tracks
•	paths/print:	S	= = = = = = = = = = = = = = = = = = = =	•	Watering	L KVIATV HACKS
☐ Rope swings	☐ Camping Si		☐ Fire pit/ring		☐ NPDES	☐ Fishing Tackle
	1 8 -		1		Discharge	L FISHING FACKIC
DOther:		-				
Dischau	e Pipes, A	ret.	fall denine.	1	Service Road	
/	1 1 0		Jan Jan Jan Jan Jan Jan Jan Jan Jan Jan	<u>'</u>	- vice court	

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

#### Page Two - Data Sheet B for WBID #:

Stream Morphol Upstream Viev	ogy: v Physical Dimen:	sions:			
	idth(ft)	Length(ft)	Ave. Depth(ft)	Max. De	pth(ft)
	idth(ft) 24'		Oo'Ave. Depth(ft)	0.85 Max. Dep	oth(ft) <i>i, 0</i>
	idth(ft)	Length(ft)	Ave. Depth(ft)	Max. Dep	oth(ft)
	esent? Yes	No)	Estimated (ft³/s	ec):	
Downstream \	iew Physical Dim	nensions:			
X Riffle W	idth(ft) 271	Length(ft) 3	o' Ave. Depth(ft)	O.8 Max. De	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
□ Run W	/idth(ft)	Length(ft)	Ave. Depth(ft)	Max. Dep	
□ Pool W	/idth(ft)	Length(ft)	Ave. Depth(ft)	Max. Dep	oth(ft)
☐ Flow Pr	esent? Yes	No No	Estimated (ft³/s	ec): 0,5	
Substrate*: (T)	nese values shou			— %Mud/Clay	— %Bedrock
grasses, wi	llows , smartwe	red on bunks	ion or algal growth	at the assessmen	t site)
Odor:	teristics*: (Mark a □ Sewage	III that apply.)  ☐ Musky	☐ Chemical	None	Other
Color:	☐ Sewage ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ Green	☐ Gray ☐ Gray	☐ Milky	
Bottom Deposit:	☐ Sludge	□ Solids	Fine sediments	□ None □	
Surface Deposit:	□ Oil	☐ Scum	□ Foam	None	Other
*This information more comprehens	is not to be used s sive understanding on on the recreation	olely for removal of water condition	(including informat of whole body contac ons. Consequently, th t may point to condit	ct recreation but ra his information is no	ther is to provide a ot intended to directly
datasheet is true	e and accurate.				ported on this UAA
Signed: / flue	· Mart	Dat	:e: <u>/0/2<i>0/0</i></u> sition: <i>Envivonm</i>	v4	
Organization:	MEC Water 1	Resources_Po	sition: <u>Environn</u>	rental Species	list

### **Stream Morphology & Discharge Measurements**

Project Name/Number: MSO - River des Peres

Date/Time: MSO - River des Peres

Site/Transect ID Number: 7-10 165

	Start Tin	ne: <u>/6</u>	20		End Time					30		
	Measured	by: <u><i>RM</i></u>	/Nm	Air	Temp:	50'F	-	w	eather Cond:			
				Stream N	/lorphole	ogy Betwe	en Trans	ects		· · · · · · · · · · · · · · · · · · ·		
		L	ength of Poo	ls		Length of Ru	n	L	ength of Riff	les		
			Start GPS					· · · · · · · · · · · · · · · · · · ·	Start GPS			
	#	ft.	#	End GPS #	ft.	Start GPS #	End GPS #	ft.	#	End GPS #		
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	14	-	<del>  </del>		<del></del>			<del></del>				
	13		<u>L</u>									
				Strea	ım Morp	hology At	Transect	:				
I	LDB Angle:		. F	RDB Angle: _	Section 1	-	Secchi (ft)		Turb	idity (NTU): _	<b></b>	
Channel	Comp (%):	<del></del>	Cobbio	50		1 40						
	- O.I.p ( 70).				Grave	40	Sand_	10	_ Silt_			
			Other									
Bank Co	ompostion		Julup	, 812016	e de la companya della companya della companya de la companya dell	. 10						
Riparian	Corridor Dens	ity:	Width of Ripa	arian Area:								
•		-			M11 - 41 -	Market Co.				<del></del>		
			Compostion	ot Kiparian	vegitation:			······································				
<u> </u>												
General	Observations	:	<del></del>				<del></del>		-			
				Ctros	wa Dia ala							
Donie.						arge Meası	urements					
Beginning Stage								Total Q:				
	Channel Width				Area:			Average Velocity:				
	Distance from I				Start:				End:			
	Meas. type: Price AA Pygmy				Type: Agu	a Calc Sheet	Δ	Agua Calc Transect #				

					Sile		30110	rge Meas	1/-		in (610)		T	T .
Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	Width		Observation Depth	Revs.	Interval Time - in seconds	At Point		ity (f/s) Mean in Ver- tical	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cfs
	1 (EOW)		0	2.2	0.2	0	0	0		0	0			
				6,2	0,5									
				10.12	0,8									
				14.8	1.0				<u> </u>					
		<u> </u>	ļ	16.0	0.85									
		<u> </u>		22.2	1.0	ļ								
		<del>                                     </del>		211.2	0,72	ļ	-		<del>}</del>					
		1		25.2	0.50		-		<b> </b>					
				24.2		<b> </b>			<del> </del>					
	Fohi	₩	<u> </u>	27.2	0	<del> </del>	├						<del> </del>	
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<b></b>										<u>A</u>	qua Calc Di	ischarge	:	
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#### Data Sheet B – Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: 15	711		Site Location Desc	crin	tion:						
Site Lat/Long: # 1660		$\sum_{i}$	THE Piver des								
Date & Time: 10/20/04	1630	/_	Facility Name:	· vei	(e3						
Personnel: Rin/NM	7070		Permit Number:								
Current Weather Condi	tions: Owicest		Weather Conditions for Past 7 days: Overast								
Photo lds: Upstream:	Down		am: Other: plustes 43-46								
Used Observed*:					powies - 17	-40					
☐ Swimming	☐ Skin Diving		SCUBA diving		Tubing	☐ Water Skiing					
☐ Wind surfing	☐ Kayaking		Boating		Wading	☐ Rafting					
☐ Hunting	☐ Trapping				None of the above						
Describe: (include numb	per of individuals	 recr	eating, frequency of	of II	se photo-documen	ntation of					
evidence of recreationa	l uses, etc.			o, u	se, prioco docume	itation of					
<b>6</b> 4 <b>6</b> 4	• •										
Surrounding Conditio	<b>ns*:</b> (Mark all that p	rom	note or impede recrea	eatio	nal uses. Attach pho	tos of evidence or					
unusual items of interest.)	1										
☐ City/county parks	☐ Playgrounds			on ,	X Urban areas	Campgrounds					
			lands								
☐ Boating accesses	☐ State parks		National forests		☐ Nature trails	☐ Stairs/walkway					
☐ No trespass sign	☐ Fence		Steep slopes		Other:						
Foldens CO CO											
Evidence of Human Us											
Roads	☐ Foot		☐ Dock/platform	n	☐ Livestock	RV/ATV Tracks					
	paths/print				Watering						
☐ Rope swings	☐ Camping Si	tes	☐ Fire pit/ring		☐ NPDES	☐ Fishing Tackle					
\					Discharge						
Other:	•					<del>-</del> -					
Discharge	ope				***						

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

#### Page Two - Data Sheet B for WBID #:

Stream Morpho Upstream Vie	logy: w Physical Dimer	sions:			
	Vidth(ft)	Length(ft)	Ave. Depth(ft)	Max. D	epth(ft)
X Run V	Vidth(ft) 40	Length(ft) 21	D Ave. Depth(ft)	0.75 Max. D	epth(ft) 1,0
	Vidth(ft)	Length(ft)	Ave. Depth(ft)	Max. D	epth(ft)
☐ Flow P	resent? Ye	5 No	Estimated (ft³/s	sec):	
Downstream	View Physical Dir	nensions:			
	Vidth(ft)	Length(ft)	Ave. Depth(ft)	Max. D	Pepth(ft)
S⊈ Run \	Width(ft) 35	Length(ft) み	ア′ Ave. Depth(ft)	0.75 Max.D	epth(ft) 1,08
	Vidth(ft)	Length(ft)	Ave. Depth(ft)	Max. D	epth(ft)
☐ Flow F	resent? Ye	s No	Estimated (ft³/	sec):	
40 %Cobble  Aquatic Vege	:tation*: (note am	vel <i>3</i> 0 %Sa nount of vegetat			
	teristics*: (Mark		T		
Odor:	☐ Sewage	☐ Musky	☐ Chemical	None	□ Other
Color:	∑ Clear	☐ Green	Gray	☐ Milky	□ Other
Bottom Deposit:	☐ Sludge	☐ Solids	Fine sediments	□ None	□ Other
Surface Deposit:	□ Oil	□ Scum	□ Foam	⊠None	□ Other
*This informatio more compreher influence a decis effect another use I, the undersign datasheet is tru	n is not to be used asive understanding ion on the recreationse.  ned, hereby affirmule and accurate.	solely for removal g of water condition on use analysis bu	ons. Consequently, t t may point to condi	act recreation but his information is tions that need fu tall information	rather is to provide a not intended to directly rther analysis or that reported on this UAA
Organization:_	INIC Waves 1	esoures Po	sition: Churon	incutal spe	curst_

#### **Stream Morphology & Discharge Measurements**

Project Name/Number: MSD - River des Perc:

Date/Time: 10/20/04 1630

Site/Transect ID Number: T-11 - 16/0

Start Time:				_					End Time:	1645	<b>Per-</b>
	Measured	by: <u> </u>	n/Nm	. Air	Temp:	50°F	<u>.</u>	We	eather Cond:		
				Stream N	/orpholo	ogy Betwe	en Trans	ects			
		Į.	Length of Poo	ols		Length of Ru	n	L	ength of Riff	les	
			Start GPS						Start GPS		
	#	ft.	#	End GPS #			End GPS #	ft.	#	End GPS #	
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l L	14										į
	15										1
				Strea	am Morp	hology At	Transec	t			
LD	DB Angle:	14025	<b>%</b>	RDB Angle:	1/2/	12%	Secchi (ft)		Turk	oidity (NTU):	
3 ·	·y 135	· 7"	_	@ 40.5	1312	12%	•		_	· · · · ·	
Channel C						1 40				-	
			Other				-				
Bank Con	npostion	I/u-		n low	e k ejék – j			······································			
			- 4 100	<del>p / (11)</del>				——————————————————————————————————————	P-77		
Riparian C	orridor De	neity:	Width of Div	parian Area:					····		***************************************
i (iparian o	orridor Dei	ioity.	-	-	***************************************	<del></del>					······································
			Compostio	n of Riparian	· Vegitation:	•					
Ganaral C	Observation						· · · · · · · · · · · · · · · · · · ·	···			
General C	Juservauoi	15:									
				Strea	am Disch	arge Meas	urements				
Beginn	ning Stage								Total O		
	hannel Wic				l Area:			Avera	ge Velocity:		
Distance from Datum to Water Surface:					Start:			,	End:		<del></del>
	Meas. ty	pe: Pric	e AA Pygmy	Data Coll.		ua Calc Sheet					

					Strea	am Dis	scha	rge Meas	urement	5			
Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	Width	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	Velo	Mean in Ver-	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cf:
	1 (EOW)		0			0	0	0		0		ļ	
				1,0	0.15								
				4.0	0,22								
	ļ	ļ		8.0	0.62							<u> </u>	
		<u> </u>		13,0	0.75		-						
		-		18.0	0.9						<del></del>		
	<del> </del>	<del> </del>		23.0 28.0	1.08				<del>                                     </del>	1			
		$\vdash$	<b></b>	33,0	1,0		<del>                                     </del>					†	
		1		35.0	1.0	<u> </u>							
		T		36.0	0.8								
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				40.0	0.1								
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Remar	ks:							-					
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#### Data Sheet B – Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #:	711	9	Site Location Description:								
Site Lat/Long: #167 (	737400/4271040		1-12, River d								
Date & Time: 10/20/02	1 1650		acility Name:								
Personnel: PMNM		F	Permit Number:								
Current Weather Cond	itions: Overcast	١	Weather Conditions for Past 7 days: overcest								
Photo Ids: Upstream	: Downs	trea	m:		Other: perotos a	17-50					
Used Observed*:					,						
☐ Swimming	☐ Skin Diving	□ S	CUBA diving		Tubing	☐ Water Skiing					
☐ Wind surfing	☐ Kayaking	□В	Boating		Wading	☐ Rafting					
☐ Hunting	☐ Trapping			DX	None of the above	☐ Other					
Describe: (include number of individuals recreating, frequency of use, photo-documentation of evidence of recreational uses, etc.  Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)  □ City/county parks □ Playgrounds □ MDC conservation 🕱 Urban areas □ Campgrounds											
☐ Boating accesses	☐ State parks		lands National forests		☐ Nature trails	☐ Stairs/walkway					
☐ No trespass sign	☐ Fence	X	Steep slopes		☐ Other:						
Evidence of Human U			☐ Dock/platforr	n	☐ Livestock Watering	□ RV/ATV Tracks					
☐ Rope swings	☐ Camping Si		☐ Fire pit/ring		□ NPDES  Discharge	☐ Fishing Tackle					
XOther:	jupes, servu	e v	vads								

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

## Page Two – Data Sheet B for WBID #:

Stream Morp	hology: 'iew Physical [	Dimens	ions:				
☐ Riffle	Width(ft)		Length(ft)	Ave. Depth(ft)	Max	Depth(ft)	
X Run	Width(ft) 3	51	Length(ft) /	OD' Ave. Depth(ft)	0,8 Max.	Depth(ft)	1.1
☐ Pool	Width(ft)		Length(ft)	Ave. Depth(ft)	Max.	Depth(ft)	
☐ Flow	Present?	Yes	(No)	Estimated (ft³/s	sec):		
Downstream	m View Physic	:al Dime	ensions:				
<b>⊠</b> Riffle		40'		の' Ave. Depth(ft)	O·I Max	. Depth(ft)	0.5
©X Run	Width(ft)	35'	Length(ft)	<i>TOU'</i> Ave. Depth(ft)	0.5 Max.	Depth(ft)	1,0
DX Pool	Width(ft)	40'	Length(ft)	75' Ave. Depth(ft)	/, 5 Max.	Depth(ft)	1.9
₿ <b>√</b> Flow	Present?	(Yes)	No	Estimated (ft³/s	sec): 0.5	,	
₩ %Cobb	getation*: (no	%Grave	el 50 % unt of vegeta	Sand —%Silt  Ation or algal growth  Who of in gravel 1		nent site)	Bedrock Shade
	racteristics*: (	Mark al					
Odor:	☐ Sewag	e	□ Musky	☐ Chemical	⊠None	☐ Other	
Color:	X Clear		☐ Green	□ Gray	☐ Milky	☐ Other	
Bottom Deposit:	☐ Sludge	!	□ Solids	Fine sediments	□ None	☐ Other	
Surface Deposit:	□ Oil		□ Scum	☐ Foam	None	□ Other	
*This informat more compreh influence a dec effect another I, the undersi datasheet is t	ion is not to be lensive underst cision on the re use. gned, hereby a true and accul	used so anding o creation affirm t rate.	olely for remove of water condi- nuse analysis b co the best of	s (including informat al of whole body conta tions. Consequently, th out may point to condit fmy knowledge, that	ct recreation but information to the city of the city	it rather is to p is not intende further analys n reported o	orovide a d to direct is or that n this UAA
Signed: 1	luce Min	t o	D	ate: 10/20/04 Position: Environ			
Organization	: MEC Wat	er Re	nuces	Position: <i>Environ</i>	mental Sy	recealent	_

#### Stream Morphology & Discharge Measurements

Project Name/Number: MSL - River des Peres

Date/Time: 10/20/04 / 1650
Site/Transect ID Number: 7-12 - 163 **Start Time:** 1650 End Time: <u>/705</u> Measured by:  $\frac{RM/NM}{}$  Air Temp:  $\frac{50^{\circ}F}{}$ Weather Cond: Overcast **Stream Morphology Between Transects** Length of Pools Length of Run Length of Riffles Start GPS Start GPS # ft. End GPS # ft. Start GPS # End GPS # # End GPS # ft. 1 2 3 4 5 6 7 8 9 10 11 12 13 14

15							
		Stream Mor	phology At T	ransect			
LDB Angle:	<u> </u>	RDB Angle:	Se	cchi (ft)	Turb	dity (NTU):	<b>-</b> *****
Channel Comp (%):	Cobble	20 Grave	el <u>30</u>	Sand 5	Silt_		
	Other						
Bank Compostion	Flut rip r	an Commite	10 × 15 000				
•	7.7.7.7						
Riparian Corridor Density	: Width of Rip	arian Area:					
	Compostion	of Riparian Vegitation	1:				
General Observations:							
·				AV			
		Stream Disch	harge Measur	ements			
Beginning Stage		Ending Stage:			Total Q:		
Channel Width:		Total Area:		,	Average Velocity:		
Distance from Da	tum to Water Surfac	e: Start:			End:		
Meas. type:	Price AA Pygmy	Data Coll. Type: Aq	ua Calc Sheet	Aqua (	Calc Transect #:		

		<del>-</del> -			Stre	am Di	scha	rge Mea	suremer	nts				
		1							Ve	loc	ity (f/s)	ı.		
Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	Width	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	At Point		Mean in Ver- tical	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cfs
	1 (EOW)		0			0	0	C		0	0			
				20	0,25									
				7.0	0.6									
				12 0	1.0									
				17.0	1,1		<u> </u>		ļ					
		<b>_</b>		22.0	1.1				ļ					
				27.0	1.1									
				32.0	0.9	ļ			-				<del> </del>	
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	£ 64.2	+	ļ	37.0	0,1		<del>                                     </del>		<del> </del>				<u> </u>	
	EOW	+	<u> </u>	40.5	U U	-								
		<del> </del>	<u></u>			<del> </del>			<b></b>					
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#### Data Sheet B – Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #:	711	Site Location Description:										
Site Lat/Long: #168 (1	737683/427077	<u>ə</u> )		les Peres								
Date & Time: 10/20/09	4 1710		Facility Name:	23 .0123	<del>*************************************</del>	***************************************						
Personnel: NM/2M			Permit Number:									
Current Weather Cond	itions: Overcust	1	Weather Condition	ns for Past 7 days:	Ove	icast						
Photo Ids: Upstream:	Downs	trea	am:	Other: plutos	51	-54						
Used Observed*:												
☐ Swimming	☐ Skin Diving		SCUBA diving	☐ Tubing		☐ Water Skiing						
☐ Wind surfing	☐ Kayaking		Boating	☐ Wading		☐ Rafting						
☐ Hunting	☐ Trapping		ishing	None of the al	bove	☐ Other						
Surrounding Condition unusual items of interest.)  □ City/county parks												
☐ Boating accesses	☐ State parks	П	lands National forests	□ Nature tra	ils	☐ Stairs/walkway						
□ No trespass sign	☐ Fence	X	Steep slopes	Other:								
Evidence of Human U	se*:											
□Roads	☐ Foot paths/print	•	☐ Dock/platform	n □ Livestock Water	ina	X RV/ATV Tracks						
☐ Rope swings	☐ Camping Si		☐ Fire pit/ring	□ NPDES □ Discha		☐ Fishing Tackle						
XOther: Dixharge	pipes											

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

### Page Two – Data Sheet B for WBID #:

□ Riffle \	ew Physical Width(ft)		Length(ft)	Ave. Depth(ft)	N	lax. Dep	th(ft)		
· · · · · · · · · · · · · · · · · · ·	Width(ft)	121	Length(ft) 5	Ave. Depth(ft)	0.8 M	ax. Dept	th(ft)	1,0	
	Width(ft)		Length(ft)	Ave. Depth(ft)	Μ	ax. Dept	th(ft)		
∃ Flow f	Present?	Yes	(No)	Estimated (ft <sup>3</sup> /s	sec):				
Downstream	View Physi	cal Dim	ensions:						
	Width(ft)		Length(ft)	Ave. Depth(ft)	N	lax. Dep	th(ft)		
	Width(ft)	255 '		Ave. Depth(ft)	1.1 M	lax. Dept	th(ft)	1.5	
	Width(ft)		Length(ft)	Ave. Depth(ft)	Μ	ax. Dept	th(ft)		
	Present?	Yes	No	Estimated (ft³/s	sec):				
	etation*: (n		ount of vegeta	tion or algal growth				Concre	t
10 or sour of	substitute,	WILLOW.	5, SMASTWEELT	; grasses along	sanus 71	K GJA	+1 10	<u> </u>	
Water Chara			ll that apply.)	, - 0					_]
<b>Water Chara</b> Odor:	cteristics*:	(Mark a	II that apply.) □ Musky	☐ Chemical	ÄNone		Oth	er	]
<b>Water Chara</b> Odor: Color:	cteristics*:  Sewa	(Mark a	II that apply.)  ☐ Musky ☐ Green	☐ Chemical   ☑ Gray	X None ☐ Milky		Oth Oth	er er	
Water Chara Odor: Color: Bottom	cteristics*:	(Mark a	II that apply.) □ Musky	☐ Chemical	ÄNone		Oth	er er	
V	cteristics*:  Sewa	(Mark a	II that apply.)  ☐ Musky ☐ Green	☐ Chemical  ☑ Gray  ▲ Fine	X None ☐ Milky		Oth Oth	er er er	
Water Chara Ddor: Color: Bottom Deposit: Gurface Deposit: Disinformation or comprehe fluence a decis fect another units	Clear Clear	(Mark a ge e e e e e e e e e e e e e e e e e	Il that apply.)	☐ Chemical  ☑ Gray  ⚠ Fine sediments	None    Milky   None    None    None    None	aterview  but rathion is not	Other Other Other other is to the er analysis	er er er chis form. co provide a ded to directlysis or that	•

## **Stream Morphology & Discharge Measurements**

Project Name/Number: MSD - Ruce der Hand Date/Time: 10/20/04 12/0

Site/Transect ID Number: T-13 168\*

		17/0						End Time:	172	5
Measured	by:	DM/NM	Air	Temp:	50°F		We		Dueica	
			Stream M	lorphol	ogy Betwe	en Transe	ects			
		Length of Poo	ls		Length of Ru	1	Le	ength of Riff	les	
		Start GPS						Start GPS		1
#	ft.	#	End GPS#	ft.	Start GPS #	End GPS #	ft.	#	End GPS #	
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			Strea	m Morp	ohology At	Transect				
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1917 B 5	17		@91,25		<u>%</u>	546 126	1 108+6	- 1 161 H	,	
Channel Comp (%):		Cobble	30	Grave	el <i>10</i>	Sand	10	Silt		:
Bank Compostion		Other 4	50 Co	mele						
Bank Compostion	11	4-1 175	1	, ,	· · · · · · · · · · · · · · · · · · ·					
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Riparian Corridor De	nsity:		-		-					
		Compostio	n of Riparian	Vegitation	):					
										1
General Observation	ns:									
			Strea	m Discl	narge Meas	urements				
Beginning Stage			Ending	Stage:				Total Q:		
Channel Wi	dth:		Tota	Area:			Avera	ge Velocity:		
Distance fro	m Datum t	to Water Surfa	ce:	Start:				End:		
Meas, ty	/De: Pri	ce AA Pvamv	Data Coll	Type: Ag	ua Calc Sheet	Α	gua Calc T	ransect #:	· <del></del>	

					Stre	am Dis	scha	rge Meas	urement	<u> </u>			
Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	Width	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	Veloc At Point	Mean in Vertical	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cfs
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#### Data Sheet B – Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #:	711	S	ite Location Descri	ption:	
Site Lat/Long: #161 (0	737824/427069	× 7	-14 Pine des	s Penes	
Date & Time: 10/20/04			acility Name:		
Personnel: QUINIM		Р	ermit Number:		
Current Weather Cond	itions: Overcast	٧	Veather Conditions	for Past 7 days: 80	ercast
Photo Ids: Upstream:	Downs	strear	m:	-58	
Used Observed*:				·	
☐ Swimming	☐ Skin Diving		CUBA diving	Tubing	☐ Water Skiing
☐ Wind surfing	☐ Kayaking	□ Во	oating $\Box$	Wading	☐ Rafting
☐ Hunting	☐ Trapping	□ Fi	ishing 🔯	None of the above	☐ Other
Describe: (include num	ber of individuals r	recrea			tation of
evidence of recreation				'	
Surrounding Condition	ons*: (Mark all that p	romo	ote or impede recreat	ional uses. Attach pho	tos of evidence or
•	ons*: (Mark all that p	oromo	te or impede recreat		tos of evidence or
•	ons*: (Mark all that p		MDC conservation	ional uses. Attach pho	tos of evidence or  Campgrounds
unusual items of interest.)	· ·		<u>'</u>		
unusual items of interest.)	· ·		MDC conservation	✓ Urban areas  □ Nature trails	<ul><li>☐ Campgrounds</li><li>☐ Stairs/walkway</li></ul>
unusual items of interest.) □ City/county parks	□ Playgrounds		MDC conservation lands	✓ Urban areas  □ Nature trails	<ul><li>☐ Campgrounds</li><li>☐ Stairs/walkway</li></ul>
unusual items of interest.) □ City/county parks □ Boating accesses	☐ Playgrounds ☐ State parks		MDC conservation lands National forests	<b>★</b> Urban areas	<ul><li>☐ Campgrounds</li><li>☐ Stairs/walkway</li></ul>
unusual items of interest.) □ City/county parks □ Boating accesses	☐ Playgrounds ☐ State parks ☐ Fence		MDC conservation lands National forests	✓ Urban areas  □ Nature trails	<ul><li>☐ Campgrounds</li><li>☐ Stairs/walkway</li></ul>
unusual items of interest.)  ☐ City/county parks ☐ Boating accesses ☐ No trespass sign	☐ Playgrounds ☐ State parks ☐ Fence		MDC conservation lands National forests	✓ Urban areas  □ Nature trails	<ul><li>☐ Campgrounds</li><li>☐ Stairs/walkway</li></ul>
unusual items of interest.)  □ City/county parks  □ Boating accesses  □ No trespass sign  Evidence of Human U	☐ Playgrounds ☐ State parks ☐ Fence		MDC conservation lands National forests Steep slopes	Urban areas  Nature trails  Other: Tukusia	☐ Campgrounds ☐ Stairs/walkway le /Hwy w wwlkway
unusual items of interest.)  □ City/county parks  □ Boating accesses □ No trespass sign  Evidence of Human U	☐ Playgrounds ☐ State parks ☐ Fence   se*: ☐ Foot paths/print		MDC conservation lands National forests Steep slopes	☐ Nature trails ☐ Other: Tukusia	☐ Campgrounds ☐ Stairs/walkway le /Huy w unl/way
unusual items of interest.)  ☐ City/county parks ☐ Boating accesses ☐ No trespass sign  Evidence of Human U	☐ Playgrounds ☐ State parks ☐ Fence		MDC conservation lands National forests Steep slopes	Urban areas  Nature trails  Other: Tukusicu  Livestock Watering	☐ Campgrounds ☐ Stairs/walkway le /Hwy w wwlkway
unusual items of interest.)  ☐ City/county parks ☐ Boating accesses ☐ No trespass sign  Evidence of Human U Roads ☐ Rope swings	☐ Playgrounds ☐ State parks ☐ Fence   se*: ☐ Foot paths/print		MDC conservation lands National forests Steep slopes	Urban areas  Nature trails  Other: Tukusia	☐ Campgrounds ☐ Stairs/walkway le /Huy w unl/way
unusual items of interest.)  □ City/county parks  □ Boating accesses □ No trespass sign  Evidence of Human U	☐ Playgrounds ☐ State parks ☐ Fence   se*: ☐ Foot paths/print		MDC conservation lands National forests Steep slopes	Urban areas  Nature trails  Other: Tukusia	☐ Campgrounds ☐ Stairs/walkway le /Huy w unl/way

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

Stream Morp Upstream V	hology: /iew Physical Dime	ensions:			
☐ Riffle	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. De	
X Run	Width(ft) 45	Length(ft) $\partial$	vv Ave. Depth(ft)	/, 5 Max. De	pth(ft) 1, 9
☐ Pool	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. De	pth(ft)
□ Flow	Present? (Y	es) No	Estimated (ft³/	sec): 0,2	
Downstrea	m View Physical D	imensions:			
☐ Riffle	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. De	
<b>⅓</b> Run	Width(ft) 451	Length(ft) 🔧	op ′ Ave. Depth(ft)	1.7 Max. De	pth(ft) ルチ
X Pool *170	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. De	pth(ft)
☐ Flow	Present?	es No	Estimated (ft³/	sec): 0.2	
Substrate*:	: (These values sho ble 35 %G	ould add up to 100 ravel 20 %S		5 %Mud/Clay	10 %Bedrock
		,	tion or algal growth		nt site)
<b>0</b> /	<i>ivillows, mastwe</i> racteristics*: (Mar	O	bunis of gravel	bar.	
Odor:	☐ Sewage	☐ Musky	☐ Chemical	<b>⊠</b> None □	Other
Color:	Ø <b>X</b> `Clear	☐ Green	<b>□</b> KGray	☐ Milky □	Other
Bottom Deposit:	☐ Sludge	☐ Solids	Fine sediments	□ None □	] Other
Surface Deposit:	Oil	□ Scum	☐ Foam	<b>≰</b> None □	Other
			(including informa		
more compreh	nensive understandi cision on the recrea	ng of water condit	ions. Consequently, t ut may point to condi	his information is n	ot intended to direct
datasheet is	true and accurate.				eported on this UAA
Signed:	Venee Mart	, Da	osition: Environ	<u> </u>	
Organization	: MEC II SIK	tu Heronices	osition: Environ	mental Specie	calist

## **Stream Morphology & Discharge Measurements**

Project Name/Number: 1950 - Rich Section 1740

Site/Transect ID Number: #169 T-14

	Start Tim	e:	1740						End Time:	176	)
	Measured b	y: <u>Rn ,</u>	INM	Air	Temp:	50°F		We	eather Cond:	Overca	A
<del></del>				Stream N	lorphol	ogy Betwe	en Transe	ects			-
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		Le	ength of Poo	is I		Length of Rui	n I	L	ength of Riff		
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				Strea	ım Mor	ohology At	Transect				
	LDB Angle:			RDB Angle:		_	Secchi (ft)		Turi	bidity (NTU):	
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Channel	Comp (%):		Cobble	30	Grav	el35	Sand	20	Cile		
I										and the second	
	ompostion		Other	mud-	<u> </u>	<u>Cererele</u>	10%				
Bank C	ompostion	FI	of My	· rap	100 <u> </u>	8 8 6 2 V	CHASS				
				200			1				
Riparian	Corridor Dens	ity:	Width of Rig	oarian Area:							
				n of Riparian							
			•	•	•						
Genera	I Observations	:									
								***************************************			
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				Strea	ım Discl	narge Meas	urements		<del>.</del>		
Bea	inning Stage								Total Q:		
	Channel Widtl	h:	<del></del>					Avera	ige Velocity:		
	Distance from				Start:			7,010	End:		
	Meas. type		***			ua Calc Sheet	-	Aqua Calc	Fransect #:		

					Stre		30110		urement	· (e)	<del> </del>	<del></del>	
Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	Width	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	Veloc	Mean in Vertical	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cfs
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Remar	ks:			7.						7.5 4.10 DI	- onarge.		

#### Data Sheet B – Site Characterization

(A separate data sheet must be completed for each site)

	711	2	Site Location Des	crip	otion:	
Site Lat/Long: # 1716	0737778/4270	73)	T-15 Ru	ei'	des Peres	
Date & Time: 10/20/04	1800		acility Name:			
Personnel: Nulpu			Permit Number:			
Current Weather Cond		_ \ \	<b>Neather Conditio</b>	ns	for Past 7 days: Ov	escast
Photo Ids: Upstream:	Down	strea	m:		Other: plutes 57.	
Used Observed*:						
☐ Swimming	☐ Skin Diving	□ S	CUBA diving		Tubing	☐ Water Skiing
☐ Wind surfing	☐ Kayaking	□В	loating		Wading	☐ Rafting
☐ Hunting	☐ Trapping	□F	ishing	$   \overline{\mathbb{X}} $	None of the above	☐ Other
Surrounding Condition unusual items of interest.)	ons*: (Mark all that p	·····				
□ City/county parks	☐ Playgrounds		MDC conservation	on	<b>X</b> Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks		National forests		☐ Nature trails	☐ Stairs/walkway
□ No trespass sign	☐ Fence	X	Steep slopes		☐ Other:	
Evidence of Human U	se*:					
Roads	☐ Foot paths/print	S	□ Dock/platforr	n	☐ Livestock Watering	RV/ATV Tracks
☐ Rope swings	☐ Camping S	ites	☐ Fire pit/ring		☐ NPDES  Discharge	☐ Fishing Tackle
XOther: Dischause	Trains/pipes					

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

Stream Morpho		sions:			
	w Physical Dimer Width(ft)	Length(ft)	Ave. Depth(ft)	Max. [	Depth(ft)
	Width(ft)	Length(ft)	Ave. Depth(ft)		Depth(ft)
	Width(ft) 40			0,5 Max. E	
<u></u>	Present? Ye		Estimated (ft³/s		
Downstream	View Physical Dir	nensions:			
N Riffle \	Width(ft) 20	Length(ft) 🕏	S Ave. Depth(ft)	D. 3 Max. 1	Depth(ft) 0.4
☐ Run	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. [	Depth(ft)
□ Pool	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. [	Depth(ft)
☐ Flow	Present? Ye	No No	Estimated (ft³/s	ec): O,	5
Substrate*: (	These values shou			— %Mud/Cla	y — %Bedrock
			on or algal growth		
No algae on	substrate, gru	sus, willows,	smartweed on gran	rel bur, ban	keides
Water Chara	cteristics*: (Mark	all that apply.)	•	,	
Odor:	☐ Sewage	□ Musky	☐ Chemical	None	☐ Other
Color:	□ <b>X</b> -Clear	□ Green	X Gray	☐ Milky	☐ Other
Bottom Deposit:	☐ Sludge	☐ Solids	✓ Fine sediments	□ None	□ Other
Surface Deposit:	Oil	□ Scum	☐ Foam	⊠None	□ Other
*This informatio more comprehei	n is not to be used nsive understanding ion on the recreati	solely for removal g of water conditic	ons. Consequently, th	ct recreation but his information is	iews) to this form.  rather is to provide a not intended to direct urther analysis or that
datasheet is tr	ue and accurate.				reported on this UA
Signed: ////	we Mate	Dat	e: 10/20/04	<i>(</i>	
Organization:_	MEC Wate	Mejorices 20	e: 10/20/09 sition: <u>Environ</u>	mental S	recialist

#### **Stream Morphology & Discharge Measurements**

Date/Time:

Project Name/Number: 1000 River No. 1000

Site/Transect ID Number: 15 / 17 / End Time: 3/5 Start Time: 1500 Measured by: Minimum Air Temp: 2007 Weather Cond: As in the Condition Stream Morphology Between Transects Length of Pools Length of Run Length of Riffles Start GPS Start GPS End GPS # Start GPS # End GPS # End GPS# ft. ft. 70 waypt 4 5 6 7 8 9 10 11 12 13 14 15 Stream Morphology At Transect LDB Angle: Secchi (ft) RDB Angle: \_\_\_\_\_ Turbidity (NTU): *20* Gravel <u>50</u> Sand <u>3</u>○ Channel Comp (%): Cobble Other **Bank Compostion** Riparian Corridor Density: Width of Riparian Area: -Compostion of Riparian Vegitation: 1) tool deeth 73', horas a server 170 way pt (0737795/4270535) utm General Observations: **Stream Discharge Measurements** Total Q: Ending Stage: Beginning Stage Average Velocity: Channel Width: Total Area: End: Distance from Datum to Water Surface: Aqua Calc Transect #: Data Coll. Type: Aqua Calc Sheet Meas. type: Price AA Pygmy

					Stre	am Di	scha	rge Meas	uremen	ts			
Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	Width	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	Velo	Mean in Ver	Adjusted for Hor.	Section Area (ft.²)	Section Discharge (cfs
	1 (EOW)		0		2,33	0	0	0		0	0		
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Remar	ks:												
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#### Data Sheet B – Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #:	710		Site Location Desc	ription:					
Site Lat/Long: #172 (			and the same of th	er des Peres					
Date & Time: 10/20/0	1815		Facility Name:						
Personnel: Parlum			Permit Number:						
Current Weather Cond	itions: Overcast		Weather Conditior	ns for Past 7 days: 👩	vercast				
Photo Ids: Upstream	: Down			Other:					
Used Observed*:									
☐ Swimming	☐ Skin Diving		SCUBA diving	☐ Tubing	☐ Water Skiing				
☐ Wind surfing	□ Kayaking		Boating	□ Wading	☐ Rafting				
☐ Hunting	☐ Trapping		☐ Fishing ☐ None of the above ☐ Other creating, frequency of use, photo-documentation of						
Surrounding Condition unusual items of interest.)  City/county parks	ons*: (Mark all that p	1	ote or impede recrea  MDC conservatio lands	ntional uses. Attach pho n X Urban areas	tos of evidence or   Campgrounds				
☐ Boating accesses	☐ State parks		National forests	☐ Nature trails	☐ Stairs/walkway				
☐ No trespass sign	☐ Fence		Steep slopes	Other: Fnd					
Evidence of Human U	<del></del>								
<b>X</b> Roads	☐ Foot paths/print	S	☐ Dock/platform	□ Livestock Watering	☐ RV/ATV Tracks				
☐ Rope swings	☐ Camping Si	tes	☐ Fire pit/ring	□ NPDES Discharge	☐ Fishing Tackle				
XOther: Discharge	Pipes								

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

Stream Morp	hology: /iew Physical	Dimens	sions:			
Riffle	Width(ft)	121		20' Ave. Depth(ft)	0.4 Max	. Depth(ft) 0.62
Run	Width(ft)		Length(ft)	Ave. Depth(ft)	Max	. Depth(ft)
☐ Pool	Width(ft)		Length(ft)	Ave. Depth(ft)	Max	. Depth(ft)
Flow	Present?	Yes	) No	Estimated (ft³/	sec):	55
Downstrea	m View Phys	ical Dim	ensions:			
☐ Riffle	Width(ft)		Length(ft)	Ave. Depth(ft)	Max	c. Depth(ft)
<b>X</b> Run	Width(ft)	50	Length(ft)	300 Ave. Depth(ft)	0,5 Max	. Depth(ft) O, 7
□ Pool	Width(ft)		Length(ft)	Ave. Depth(ft)	Max	. Depth(ft)
Flow	Present?	Yes	) No	Estimated (ft³/	sec):	1,0
	egetation*: (n		ount of veget	Sand — %Silt ation or algal growth banks, No al		ment site)
•	•	,	ll that apply.)	•	,	
Odor:	☐ Sewa	ge	☐ Musky	☐ Chemical	XNone	☐ Other
Color:	Z Clear		☐ Green	Ø Gray	☐ Milky	☐ Other
Bottom Deposit:	☐ Sludg	e	☐ Solids	Fine sediments	□ None	☐ Other
Surface Deposit:	□ Oil		□ Scum	☐ Foam	None	□ Other
This informat more compreh	tion is not to b nensive unders	e used sestanding	olely for remo of water cond	itions. Consequently, t	act recreation b his information	rviews) to this form.  ut rather is to provide a  is not intended to direc  further analysis or that
effect another , the undersi datasheet is	r use. igned, hereby true and acc	/ affirm urate.	to the best o	f my knowledge, tha	t all informatic	on reported on this UA
Signed: <u>//</u>	luce M	art		Date:         10/20/6           Position:         Environ	54	<del></del>
)rganization	. Mrt W	etu k	Pewers.	Position: Enwar	rmental	Socialist

## Stream Morphology & Discharge Measurements

End Time: 1845 Start Time: 1815 Measured by: RW/NM Air Temp: D°E Weather Cond: <u>Pyercan</u>-**Stream Morphology Between Transects** Length of Pools Length of Run Length of Riffles Start GPS Start GPS End GPS # Start GPS # End GPS # ft. ft. End GPS # 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 **Stream Morphology At Transect** LDB Angle: RDB Angle: Secchi (ft) Turbidity (NTU): 3,82 40 Gravel <u>30</u> Sand <u>30</u> Silt — Channel Comp (%): Cobble

Other

Width of Riparian Area:

Compostion of Riparian Vegitation:

Bank Compostion

Riparian Corridor Density:

General Observations:

- 111					Stre	am Di	scha	rge Meas	uremen	ts				
Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	Width	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	Velo	ocit	ty (f/s) Mean in Ver- tical	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cfs
	1 (EOW)		0		0.3	0	0	C		0	0			
		1		5.0	0.4					_			<u> </u>	
		<b> </b>		8,0	0.62				<u> </u>	4	<del></del>		ļ	
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		<del>                                     </del>		14.0	0.43					$\dashv$		· · · · · · · · · · · · · · · · · · ·	<u> </u>	
				20.0	0142	<u> </u>		-	1	7	<del></del>			
	1	†	_	21,0	0.3			-						
	Entra			33,0	2									
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									Lo	og	Sheet Tota	als:		
									Sheet 0	Ca	Iculated Di	scharge		
20000	dra :									Αq	ua Calc Di	scharge	•	
Remar	KS:								***					
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#### Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #:	1710		Site Location Des	cri	ption:					
Site Lat/Long: 073780	14769897			,	17 - Ri	ver Des Percs				
Date & Time: 10/21/0			Facility Name:		•					
Personnel: NM/C	Ĺ		Permit Number:	Permit Number:						
Current Weather Cond	litions: Novdy		Weather Conditio	ns	for Past 7 days: C	loudy				
Photo Ids: Upstream	: Dówn	stre	am:		Other:	J				
tic #5 00	96-0099		•							
Used Observed*:										
☐ Swimming	☐ Skin Diving		SCUBA diving		Tubing	☐ Water Skiing				
☐ Wind surfing	☐ Kayaking		Boating		Wading	☐ Rafting				
☐ Hunting	□ Trapping		Fishing		None of the above					
Describe: (include num	ber of individuals	recr	eating, frequency	of	use, photo-docume	ntation of				
evidence of recreation	al uses, etc.									
Surrounding Condition	ane* (Mark all that		ata arimanada wa wa	:	amalusas Attuili il					
unusual items of interest.)	ons . (Mark an that )	ווטונ	iote or impede recre	ati	onal uses. Attach pho	tos of evidence or				
☐ City/county parks	☐ Playgrounds		MDC conservation		✓ Urban areas	☐ Campgrounds				
delegreduity parks	-   laygrounds		lands	311	A Orban areas	☐ Campgrounds				
☐ Boating accesses	☐ State parks	$I_{\Pi}$	***************************************		☐ Nature trails	☐ Stairs/walkway				
□ No trespass sign	KÍ Fence				Other: Roads					
	J. C. C. C. C. C. C. C. C. C. C. C. C. C.	<i></i>	этеер лорез	-	A Other Raas	- both sides				
Evidence of Human U	Jse*:									
⊠Roads	□ Foot		☐ Dock/platforr	n	☐ Livestock	☐ RV/ATV Tracks				
	paths/print	:s		••	Watering	- KVII (I V Hucks				
☐ Rope swings	☐ Camping S	ites	☐ Fire pit/ring		☐ NPDES	☐ Fishing Tackle				
,			1		Discharge					
□ Other:					<u> </u>					
					······································					

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

Stream Morphol Upstream View	logy: w Physical Dimens	ions:			
	/idth(ft)	Length(ft)	Ave. Depth(ft)	Max. D	epth(ft)
	Vidth(ft)	Length(ft)	Ave. Depth(ft)	Max. Do	epth(ft)
	Vidth(ft) 60	Length(ft) /00	Ave. Depth(ft)	0.5 Max. De	epth(ft) 7.5
	resent? (Yes		Estimated (ft³/s	ec): @10	
Downstream \	View Physical Dim	ensions:			
X Riffle W	/idth(ft) 75	Length(ft) 5つ		·	epth(ft) /.Ø
□ Run V	Vidth(ft)	Length(ft)	Ave. Depth(ft)		epth(ft)
▼ Pool V	Vidth(ft) 40	Length(ft) /00	Ave. Depth(ft)		epth(ft) /.5
Flow P	resent? Yes	No No	Estimated (ft³/s	ec): <b>Ø</b> /0	
80 %Cobble  Aquatic Vege	hese values should 20 %Grav  tation*: (note amo	el 6 %Sand	d O %Silt		
	teristics*: (Mark a	ll that apply.)			
Odor:	□ Sewage	☐ Musky [	] Chemical	∧ None	□ Other
Color:	ズ Clear	∭ Green [	∃ Gray	□ Milky	☐ Other
Bottom Deposit:	☐ Sludge	□ Solids 8	S Fine sediments	□ None	□ Other
Surface Deposit:	□ Oil	□ Scum □	Foam	∕ None	□ Other
*This information more comprehend influence a decision effect another use	sive understanding on on the recreation e. ed, hereby affirm	olely for removal of of water conditions n use analysis but m	whole body contacts. Consequently, the nay point to condite knowledge, that	et recreation but r lis information is I ions that need fur	ews) to this form.  rather is to provide a not intended to directly ther analysis or that reported on this UAA
Organization:	<u> </u>	Posit	ion:		

## **Stream Morphology & Discharge Measurements**

Project Name/Number: MSD uAA

Date/Time: 10/21/84 14 35
Site/Transect ID Number: 17 - River Des Pares **Start Time:** \_\_\_\_\_/435 End Time: 1450 Measured by: NM/CL Air Temp: 55°F Weather Cond: (Jourle) Stream Morphology Between Transects Site 181 GPS Length of Pools Length of Run Length of Riffles Start GPS Start GPS End GPS # Start GPS # End GPS # ft. End GPS # 4 5 6 7 8 9 10 11 12 13 14 15 Taken @ ROB **Stream Morphology At Transect** RDB Angle: 27% / 16 Secchi (ft) \_\_\_\_\_ Turbidity (NTU): \_\_\_\_ LDB Angle: 14 % / 8° @95' from LDB Gravel 20 Sand Channel Comp (%): Cobble Silt Other Bank Compostion ( encrete / Width of Riparian Area: Riparian Corridor Density: Compostion of Riparian Vegitation: General Observations: Stream Discharge Measurements Beginning Stage Ending Stage: Total Q: Channel Width: Total Area: Average Velocity:

Start:

Data Coll. Type: Aqua Calc Sheet

Distance from Datum to Water Surface:

Meas. type: Price AA Pygmy

Aqua Calc Transect #:

					Strea	am Dis	scha	rge Meas	uremen	ts			
			_						Velo	city (f/s)	i i		
Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	Width	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	At Point	Mean in Ver- tical	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cf
	1 (EOW)		0		0	0	0	0		0	0		
			G		0.1								
			15		6.2		<u> </u>		<u> </u>				
			21		0.2								
			27		0.5								
			33		0.55								
		<u> </u>	39		0.62		ļ —						
		<u> </u>	45		0.88		<u> </u>						
	-	-	51		1,20		<del> </del>						
	-	-	57		1.00		<u> </u>				-		
		╂	63 69		1.10	-	┢						<u> </u>
	<u> </u>	╂	75		1.15		-				<del> </del>		
	1	$\vdash$	81		0.85						-		
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			92		0.5						<b>-</b>		
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#### Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #:	1710 /	T	Site Location Desc	 cri	ption:					
Site Lat/Long! 1/0/21	104 0 73 7912/426	$\overline{}$			•					
Date & Time: 15:0			Facility Name:							
Personnel: Nm/co			Permit Number:							
Current Weather Cond	itions: Cloudy		Weather Conditions for Past 7 days: Overcast							
Photo Ids: Upstream:	: /0/ Down:	strea	am: 703		Other: Bunks -					
Used Observed*:										
☐ Swimming	☐ Skin Diving		SCUBA diving		Tubing	☐ Water Skiing				
☐ Wind surfing	☐ Kayaking		Boating		Wading	☐ Rafting				
☐ Hunting	☐ Trapping				None of the above	☐ Other				
Describe: (include num	ber of individuals	recre	eating, frequency of	of.	use, photo-docume	ntation of				
evidence of recreations	al uses, etc.				•					
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C	<del></del>			-						
Surrounding Condition unusual items of interest.)	ons": (Mark all that p	rom	ote or impede recrea	ati	ional uses. Attach pho	tos of evidence or				
			MDC							
☐ City/county parks	☐ Playgrounds		MDC conservation	n	Urban areas	□ Campgrounds				
☐ Boating accesses	Ctata parka	П				5 0 1				
	☐ State parks	+	National forests		☐ Nature trails	☐ Stairs/walkway				
☐ No trespass sign	₩ Fence	X	Steep slopes		☐ Other:					
Evidence of Human U	se*:									
□Roads	☐ Foot		☐ Dock/platform	n	☐ Livestock	☐ RV/ATV Tracks				
	paths/print	s	Ì		Watering					
☐ Rope swings	☐ Camping Si	tes	☐ Fire pit/ring		☐ NPDES	☐ Fishing Tackle				
					Discharge	8				
□ Other:										

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

Stream Morphol Upstream View	logy: w Physical Dimens	ions:			
	/idth(ft) /cD	Length(ft) 20 と	Ave. Depth(ft)	0.4 Max. [	Depth(ft) / O
☐ Run W	vidth(ft)	Length(ft)	Ave. Depth(ft)	Max. [	Depth(ft)
☐ Pool W	/idth(ft)	Length(ft)	Ave. Depth(ft)	Max. D	Depth(ft)
⊠ Flow Pr	resent? (Tes	No	Estimated (ft³/s	ec): <i>Or [0</i>	
Downstream \	/iew Physical Dim	ensions:			
Æ Riffle W	/idth(ft) <i>G</i> つ	Length(ft) 30と	Ave. Depth(ft)		Depth(ft) O. &
☐ Run W	Vidth(ft)	Length(ft)	Ave. Depth(ft)	Max. D	Depth(ft)
☐ Pool W	Vidth(ft)	Length(ft)	Ave. Depth(ft)	Max. D	Depth(ft)
, Flow Pr	resent? (Yes	No	Estimated (ft³/s	ec): (a) /(	2
Substrate*: (T	hese values should	d add up to 100%			
&C %Cobble	この %Grav	el 💍 %Sar	nd Silt	్ర %Mud/Cla	y %Bedrock
Aquatic Vege		ount of vegetation	on or algal growth	at the assessmo	ent site)
Water Charac	teristics*: (Mark a	ll that apply.)			
Odor:	☐ Sewage	☐ Musky	☐ Chemical	None None	□ Other
Color:	∠ Clear		☐ Gray	□ Milky	☐ Other
Bottom Deposit:	☐ Sludge	□ Solids	☐ Fine sediments	X None	□ Other
Surface Deposit:	□ Oil	☐ Scum	☐ Foam	None	□ Other
Comments: Plea			•		iews) to this form.
more comprehens	sive understanding on on the recreation	of water conditior	ns. Consequently, th	is information is	rather is to provide a not intended to directly irther analysis or that
I, the undersigned datasheet is true		to the best of my	y knowledge, that	all information	reported on this UAA
Signed: ( 22.1	water find	herm Date	: <u>10/21/0</u>	9	
Organization:	<i></i>	Pos	ition:	·	

## **Stream Morphology & Discharge Measurements**

Project Name/Number: <u>MSD - UAA</u>

Date/Time: <u>10/21/02+ 15:00</u>

Site/Transect ID Number: 18 - Rever Des Peres

	Start Tir	me: <u>/5</u>	.00	_					End Time:	15:15	
	Measured	by: <u> </u>	N/CL	_ Air	Temp: <u>5</u>	5°F	-	We	eather Cond:	Cloud	<del>/</del>
GPS	Put -	182		Stream N	/lorpholc	ogy Betwe	en Trans	ects			
			ength of Poo			Length of Rui			ength of Riffl	les	
,			Start GPS			T			Start GPS		
<b> </b>	#	ft.	#	End GPS #	ft.	Start GPS #	End GPS #	ft.	#	End GPS #	
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ι	LDB Angle:		- '	RDB Angle:		-	Secchi (ft)		Turb	bidity (NTU):	
		·							<u>-</u>		
Channel	Comp (%):		Cobble	80	Grave	1 20	Sand		Silt		
	<b>4</b> (70).				Olufo.		Janu_		- Jin.		
<del></del>			Other								
Bank Co	ompostion <u>(</u>	OUCVY	ete Ri	presp							
				•							
Riparian	Corridor Den	sity:	Width of Rig	parian Area:	ga.	I DD	-201	יט אינע ט	IN / DA	- A	RBB-0
İ		-	Compostio	⊤ n of Riparian	Vegitation:	*		, ,,,,,,			
			Compositor	101 Kiparian	vegitation.			-		<del></del>	
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Generai	l Observation:	s:									
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						arge Meas					
Beginning Stage								Total Q:			
	Channel Wid	***************************************			· · · · · · · · · · · · · · · · · · ·			Average Velocity:			
<u> </u>	Distance from				Start:			···	End:		
	Meas. tyr	pe: Price	AA Pygmy	Data Coll.	. Type: Aqu	ia Calc Sheet		Aqua Calc Transect #:			

							1		uremen	ncif	ty (f/s)			
Time	Station #	Angle Coefficient		Width	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	At Point		Mean in Ver- tical	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cf
	1 (EOW)		0		0	0	0	0		0	0			
	+				0.7									
	·		6		1.15									
			1(		1,0									
			16		1.05					$\perp$				
			20		0.4								<u> </u>	
			22		0.1					_			<u> </u>	
			23		6					_				
			34		0					$\dashv$			1	
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			37		0.23								<u> </u>	
		<u> </u>	39		0.2		ļ						<u> </u>	
			40		0									
			46		С		<u> </u>							
		<u> </u>	47		0.4			• •					·	
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	ļ	<u> </u>	57		0.65									
		<u> </u>	62		0,5		<u> </u>		ļ					
		<u> </u>	67		0.5					$\perp$				
		<u> </u>	72		0.5		ļ		ļ					
		<u> </u>	77		0.3		ļ							
			83		0.3				ļ <u></u>					
		ļ	57	- <del>-</del> -	0.3									
		<u> </u>	92		0.3	<u> </u>	<u> </u>		ļ	$\downarrow$				
		<u> </u>	97		0.4									
			102		0.7				ļ	$\perp$				
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		<b>.</b>	112		0.35					_				
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			119		0.3						Sheet Tota			
			121		0		~~~	Sheet Calculated Discharge:						
	•		731		6					Αq	ua Calc Di	scharge:		
Remai	KS:		136		©.3	•								
			139		6.3								. ,	
			142	L	O									

#### Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #:	710		Site Location Desc	rip	otion:	
Site Lat/Long: #/	83 0737937/4	269	Riverles Peves	T-	. 19	
	1/04 1520		Facility Name:	•		
Personnel: Nm/	CL		Permit Number:			
Current Weather Cond	litions: Cloudy		Weather Condition	ns f	for Past 7 days:	
Photo Ids: Upstream		stre	am: 107		Other: 104 \$ 1	106
pic. #s - 9-12						
Used Observed*:						
☐ Swimming	☐ Skin Diving		SCUBA diving		Tubing	☐ Water Skiing
☐ Wind surfing	☐ Kayaking		Boating		Wading	☐ Rafting
☐ Hunting	☐ Trapping				None of the above	
Describe: (include num	ber of individuals	recr	eating, frequency o	ofι	ıse, photo-documer	ntation of
evidence of recreation	al uses, etc.					
Currounding Condition	n m a * /					
Surrounding Condition unusual items of interest.)	ons": (Mark all that p	orom	ote or impede recrea	atic	onal uses. Attach pho	tos of evidence or
☐ City/county parks			MDC		i⊐′	
- City/County parks	☐ Playgrounds		MDC conservation	n	🕱 Urban areas	□ Campgrounds
☐ Boating accesses	☐ State parks	$\vdash_{\sqcap}$	National forests		□ Natura tuaila	
		$\vdash$			☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	×	Steep slopes		☐ Other:	
Evidence of Human U	lse*:					
□Roads	☐ Foot		☐ Dock/platform	n	☐ Livestock	□ RV/ATV Tracks
	paths/print	S	<u>'</u>		Watering	
☐ Rope swings	☐ Camping Si	tes	☐ Fire pit/ring		☐ NPDES	☐ Fishing Tackle
					Discharge	
□ Other:						<u> </u>

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

Stream Morphol Upstream View	logy: w Physical Dimens	ions:			
☐ Riffle W	/idth(ft)	Length(ft)	Ave. Depth(ft)	Max. D	Depth(ft)
□ Run W	/idth(ft)	Length(ft)	Ave. Depth(ft)	Max. D	epth(ft)
ĭ <b>⊠</b> Pool W	/idth(ft) 80	Length(ft) 250	S Ave. Depth(ft) ¿	9,8 Max.D	epth(ft) ルム
⊠ Flow Pr	resent? (es)		Estimated (ft³/se	ec):	
Downstream \	View Physical Dim	ensions:			
☐ Riffle W	/idth(ft)	Length(ft)	Ave. Depth(ft)		Depth(ft)
□ Run V	Vidth(ft)	Length(ft)	Ave. Depth(ft)		epth(ft)
X Pool ∨	Vidth(ft) 60	Length(ft) /50	Ave. Depth(ft) 👩	S Max. D	epth(ft) 1.2
Ø Flow Pi	resent? (Yes)	No	Estimated (ft³/se	ec): / 🛆	
Substrate*: (T	hese values should			— %Mud/Cla	y — %Bedrock
Sc Water Charac	tation*: (note amo me beのも teristics*: (Mark al	ic alga	on or algal growth a	at the assessme	
Odor:	□ Sewage	□ Musky	☐ Chemical	None	☐ Other
Color:	🌠 Clear	☐ Green	☐ Gray	☐ Milky	☐ Other
Bottom Deposit:	□ Sludge	☐ Solids	☐ Fine sediments	⊠ None	□ Other
Surface Deposit:	□ Oil	□ Scum	□ Foam	X None	□ Other
*This information more comprehen:	is not to be used so sive understanding on on the recreation	olely for removal c of water condition	ncluding informations of whole body contactions. Consequently, this may point to conditions.	t recreation but is information is	
datasheet is tru-	e and acgurate.				reported on this UAA
Signed: ( as	such Janet	he my Date	:: 16/21/6 ition: <u>Environm</u>	9	
Organization:	MEC Water Res	ources Pos	ition: Environme	ental Specia	list

# **Stream Morphology & Discharge Measurements**

Project Name/Number: MSD UAA

Date/Time: 10/21/04 //520

Site/Transect ID Number: / 9

	Start Tir	me: <u>/5</u>	120						End Time:	1513	5	
			4	. Air	Temp:	55°F	<b>-</b>	We		Clou		
				Stream M	lorpholo	ogy Betwe	en Trans	ects	•	· · · · · · · · · · · · · · · · · · ·	<del></del>	
]		L	ength of Poo	ls		Length of Ru	n	Le	ngth of Riff	les		
1			Start GPS						Start GPS			
	#	ft.	#	End GPS #	ft.	Start GPS #	End GPS #	ft.	#	End GPS#		
	1											
	2		ŀ									
	3					T						
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	13		<del>                                     </del>									
	14					+						
	15											
	<u> </u>		1	Stros	m Morn	hology At	Transact		<u>i</u>			
					_							
	LDB Angle: _		. '	RDB Angle: _		_	Secchi (ft)	···	Turb	oidity (NTU):		
Channel	Comp (%):		Cobble	21	Grave	1_20_	Sand		C:14			
Viluini	Comp (70).			<u> </u>	Glave		Sanu_		. 9III.			
			Other	<del></del>			····					
Bank C	ompostion _	Rock	, Conc	rete								
			<u>,</u>						.,,,,			
Riparian	Corridor Den	sity:	Width of Rip	arian Area:_	5/1	;						
•			Compostion	- of Dinarian	Varitations	Trees		i . /	7 1			
			Compositor	1 Oi Kiparian	Vegitation.	1866	- Shri	1 , <u>id</u>	r C P 2			
Genera	General Observations:											
					·							
		•			<del></del>					··		
						arge Meas	urements					
Begi	inning Stage								_			
	Channel Widt				Area:			Averag	e Velocity: _			
	Distance from				Start:				End:		,	
	Meas. typ	e: Price	AA Pygmy	Data Coll.	Type: Aqu	a Calc Sheet	۵	lgua Calc Tr	ansect #:			

					Stile	alli Di	SUIIG	rge Meas	ul Cilicii				<del></del>
Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	Width	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	Velo	Mean in Ver-	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cf
	1 (EOW)		0		<u> </u>	0	0	0		0 0			
			1.5		0,6								
			7.5		0.7								
			13.5		0.6								
			19.5		0.9						<u> </u>		<u> </u>
			25.5		1.6								
		<u> </u>	31.5		0.65		<u> </u>		-		ļ		
			37.5		0.9		-		ļ		<u> </u>	<del>                                     </del>	<del>                                     </del>
		-	43.5		0.8	<u> </u>	-						
			49.5		0.6				<del> </del>		<u> </u>		<del> </del>
			55,5 61.5		0.7						<b> </b>	<del> </del>	
		<del>                                     </del>	67.5		0.7						·	<u> </u>	<del>                                     </del>
			69.5		0,6						<u> </u>		<del> </del>
			71		0								
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			L						Lo	og Sheet Tot	als:		
										Calculated D			
										Aqua Calc D	ischarge		
emar	ks:												

## Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #:	1710		Site Location Desc	rin	otion (0 738136/4	7690201
Site Lat/Long: 184 NM.		147	69279	-' '} 	7-20 River of	20 (620)
	1/04 15:40	/ 14	Facility Name:		I D C FINER O	es leves
Personnel: Nim/	12		Permit Number:			
Current Weather Cond	litions: Cloud	,	Weather Conditio	ns	for Past 7 days: (	<i>vercust</i>
Photo Ids: Upstream					Other: 108 \$	110 Banks
Used Observed*:						
☐ Swimming	☐ Skin Diving		SCUBA diving		Tubing	☐ Water Skiing
☐ Wind surfing	☐ Kayaking		Boating	П	Wading	☐ Rafting
☐ Hunting	☐ Trapping			Ø	None of the above	☑ Other
Describe: (include num						ntation of
evidence of recreation	al uses, etc.		<b>O</b> , 1 J		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Sarvey Crev	U					
7						
Surrounding Conditio	mex. Morle all that		aka anton d			
Surrounding Condition unusual items of interest.)	ons". (Mark all that p	orom	ote or impede recre	atı	onal uses. Attach pho	tos of evidence or
☐ City/county parks	☐ Playgrounds	Το	MDC conservation	<u> </u>	A Ilrhan aross	П С
delegreeding parks	- I laygrounds		lands	111	X Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	$\dagger_{\Box}$	National forests		☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	<b>▼</b> Fence	ZX			Other:	
					1 a ctrici.	
Evidence of Human U	se*:					
□ Roads	□ Foot		☐ Dock/platform	า	☐ Livestock	□ RV/ATV Tracks
	paths/print	S	' '		Watering	
☐ Rope swings	☐ Camping S	ites	☐ Fire pit/ring		☐ NPDES	☐ Fishing Tackle
					Discharge	8
□ Other:						

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

Stream Morphol Upstream View	ogy: v Physical Dimen	sions:							
	idth(ft) (cD	Length(ft) 200	Ave. Depth(ft)						
□ Run W	idth(ft)	Length(ft)	Ave. Depth(ft)	Max. Dep					
☐ Pool W	idth(ft)	Length(ft)	Ave. Depth(ft)	Max. Dep	th(ft)				
Ø Flow Pr	esent? Yes	No No	Estimated (ft³/s	ec): 10					
Downstream \	iew Physical Din	nensions:							
<b>Z</b> Riffle W	idth(ft) 90	Length(ft) 50		C.S Max. Dep					
	/idth(ft)	Length(ft)	Ave. Depth(ft)	Max. Dep					
☐ Pool W	/idth(ft)	Length(ft)	Ave. Depth(ft)	Max. Dep	oth(ft)				
<b>⊠</b> Flow Pi	esent? Yes	) No	Estimated (ft³/s	ec): 					
Substrate*: (T	nese values shou	ld add up to 100% vel %Sar		%Mud/Clay	%Bedrock				
Aquatic Vegetation*: (note amount of vegetation or algal growth at the assessment site)  Some benthic Algae									
Water Charac Odor:	teristics*: (Mark a	T	☐ Chemical	<b>⊠</b> None □	Other				
Color:	☐ Sewage   X Clear	☐ Musky ☐ Green	☐ Gray	☐ Milky	Other				
Bottom Deposit:	☐ Sludge	□ Solids	☐ Fine sediments	⊠ None □	Other				
Surface Deposit:	□ Oil	□ Scum	☐ Foam	X None □	Other				
Comments: Please attach additional comments (including information from interviews) to this form.  *This information is not to be used solely for removal of whole body contact recreation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.									
datasheet is tru  Signed:	e and accurate.	henry Date	:: 10/21/c	all information rep	ported on this UAA				
J. 54.112411011	conter re	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		FEC	5 1 1 Cm / w 1				

# Stream Morphology & Discharge Measurements Project Name/Number: MS O UAA

Date/Time: 10/21/04 1540 Site/Transect ID Number: 7-20 Start Time: 15140 End Time: 16'00 Weather Cond: Cloudy Measured by: NM/CL Air Temp: 55°F **Stream Morphology Between Transects** Length of Pools Length of Run Length of Riffles Start GPS Start GPS ft. End GPS # Start GPS # End GPS # ft. ft. End GPS # 2 3 5 6 7 8 9 10 11 12 13 14 15 Stream Morphology At Transect LDB Angle: \_\_\_\_ RDB Angle: Secchi (ft) Turbidity (NTU):

Channel Comp (%):	Cobble 50	Gravel_	50	Sand	Silt	
	Other					
Bank Compostion Com	crete, Rock					
Riparian Corridor Density:	Width of Riparian Area:	0				
	Compostion of Riparian \	egitation: _				
General Observations:						
Ceneral Observations.			<del></del>			
<del> </del>						
	Strear	n Dischar	ge Measi	urements		
Beginning Stage	Ending S	tage:			Total Q:	
Channel Width:	Total /	Area:		Ave	erage Velocity:	
Distance from Datum	to Water Surface:	Start:			End:	

Data Coll. Type: Aqua Calc Sheet

Meas. type: Price AA Pygmy

Aqua Calc Transect #:

					Strea	am Di	scha	rge Meas	uremer	nts				
		1							Vel	oc	ity (f/s)	ن		
Time	Station #	Angle Coefficient	Distance (from initial Point-ft.)	Width	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	At Point		Mean in Ver- tical	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cfs
	1 (EOW)		0			0	0	O		0	0			
			1		0,2									
			7		0.5									
			13		0.4									
			19		0.4									
			25		0.3							<u> </u>		
			3)		D. 4									
	<u> </u>	1	3.7		0,1				<b> </b>				<b></b>	ļ
		<b></b>	43		0,3				<u> </u>				<u> </u>	
		<b> </b>	49		0,5	ļ			<u> </u>				<b> </b>	
		<u> </u>	5-5-		0.4				ļ			<b></b>	ļ	
		1	61		0.8				<u> </u>				<u> </u>	
····	ļ	<del> </del>	67		0.4				ļ				ļ	
		$\vdash$	73		0.6				<u> </u>				<del> </del>	
	<u> </u>	╂	79		24		<u> </u>		<u> </u>					
		╂──	85		0.5	ļ	<del> </del>	·	<u> </u>					
	<u> </u>	╂	91		0.5	<del> </del>	<b></b> -		-			<del> </del>		
	<u> </u>	╫	96		0.3		<del> </del>		<u> </u>					
		1	77		0.0		<b> </b> -						1	
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		+							<b>†</b>		-			
	1	$\vdash$					<del>                                     </del>		1					
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			•						L	.00	Sheet Tot	als:	1	
											alculated D			
											qua Caic D			
Remar	ks:													

#### Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #:	<u> </u>		Cita Lagation Des		·						
Site Lat/Long: 07383	710	$\dashv$	Site Location Description:								
Date & Time: 10/21/3	2/4/68839	-	River Des Peres - 21								
Personnel: Nm /c c	4 16:05		Facility Name: Permit Number:								
Current Weather Cond	itions: C/ A/				- f D t	1: :					
Photo Ids: Upstream			Weather Conditions for Past 7 days: Cloudy								
PICS # 17-20	OTT DOWN	3110	am: 0115		Other: 0112 %	- 0114 Banks					
Used Observed*:											
☐ Swimming	☐ Skin Diving		SCUBA diving		Tubing	☐ Water Skiing					
☐ Wind surfing	☐ Kayaking		Boating			☐ Rafting					
☐ Hunting	☐ Trapping		Fishing	Ø	K None of the above	□ Other					
Describe: (include num	ber of individuals	recr	eating, frequency	of	use, photo-docume	ntation of					
Describe: (include number of individuals recreating, frequency of use, photo-documentation of evidence of recreational uses, etc.											
c l: c l::	4. (										
Surrounding Condition	<b>ns*:</b> (Mark all that p	orom	ote or impede recre	ati	ional uses. Attach pho	otos of evidence or					
unusual items of interest.)		Т-				4.					
☐ City/county parks	☐ Playgrounds			on	X Urban areas	Campgrounds					
		<u> </u>	lands			· · · · · · · · · · · · · · · · · · ·					
☐ Boating accesses	☐ State parks		National forests		☐ Nature trails	☐ Stairs/walkway					
☐ No trespass sign	A Fence	<u> </u>	Steep slopes		DOther: Tuckos	mal.					
Evidence of Human Use*:											
Roads	□ Foot		TCD 111.6		15	T					
□ ROau3	paths/print	_	☐ Dock/platforn	n	☐ Livestock	☐ RV/ATV Tracks					
☐ Rope swings					Watering						
□ Kope swillgs	☐ Camping Si	tes	☐ Fire pit/ring		☐ NPDES	☐ Fishing Tackle					
□ Other:					Discharge						
a other.											

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

Stream Morpho	ology: w Physical Dimens	sions:			
	Vidth(ft) //じ	Length(ft) 500	Ave. Depth(ft)	0.4 Max. Depth(ft)	0.9
	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)	
	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)	
	Present? (Yes		Estimated (ft³/s	ec): @ /O	
Downstream	View Physical Dim	ensions:			
X Riffle \	Width(ft) //こ	Length(ft) 500	Ave. Depth(ft)	0.4 Max. Depth(ft)	
□ Run	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)	
□ Pool	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)	
J¥ Flow F	Present? Yes	No	Estimated (ft <sup>3</sup> /s	ec): @ /O	
SO %Cobble		vel — %Sand	d – %Silt		%Bedrock
Aquatic Vege	etation*: (note amo	ount of vegetation	n or algal growth	at the assessment site)	<del></del>
Serve 6	within algo	? C			
Water Chara	cteristics*: (Mark a	ll that apply.)			
Odor:	☐ Sewage	☐ Musky [	Chemical	X None ☐ Othe	er
Color:	√ Clear	☐ Green □	∃ Gray	☐ Milky ☐ Othe	er
Bottom Deposit:	☐ Sludge	□ Solids □	∃ Fine sediments	☑ None □ Othe	er
Surface Deposit:	□ Oil	□ Scum □	] Foam	None 🗆 Othe	er
*This informatio more comprehe	n is not to be used s nsive understanding sion on the recreatio	olely for removal of of water conditions	whole body contacts. Consequently, th	ion from interviews) to to ct recreation but rather is to his information is not inten- tions that need further anal	o provide a ded to directl <u></u>
datasheet is tr	ned, hereby affirm ue and accurate.  And And MER NATER RE	-	_	all information reported	on this UAA
Organization:_	MEZ WATER RE	<i>SturcES</i> Posit	ion: <u>Engrena</u>	MENTAL SPUCIALIST	

# Stream Morphology & Discharge Measurements

Project Name/Number: \_/NSD - UAA Date/Time: \_/O/21/04 16:05 Site/Transect ID Number: T21

Start Time:   16:20   Measured by:   NM/LL   Air Temp:   50° F   Weather Cond:   Cloudy
# ft.   Start GPS   End GPS # ft.   Start GPS   End GPS # ft.   Start GPS   End GPS # ft.   Start GPS   End GPS # ft.   End GP
# ft. Start GPS # ft. Start GPS # ft. Start GPS # ft. Start GPS # ft. # End GP
# ft. Start GPS # End GPS # ft. Start GPS # End GPS # ft. Start GPS # End GPS # ft. Start GPS # End GPS # ft. # End GPS # Ft. # End GPS # End GP
# ft. # End GPS # ft. Start GPS # End GPS # ft. # End GPS #  2
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3 4 5 6 6 7 7 7 8 8 9 9 10 10 11 1 12 12 13 14 14 1 14 1 15 16 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18
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5         6         7         8         9         10         11         12         13         14
6 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
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9 10 11 11 12 12 13 13 14 14 15 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18
10 11 12 13 14
11
12 13 14
13 14
14
15
Stream Morphology At Transect
LDB Angle: RDB Angle: Secchi (ft) Turbidity (NTU):
Channel Comp (%): Cobble 2.0 Gravel 50 Sand Silt
Other
Bank Compostion
tiparian Corridor Density: Width of Riparian Area:
Compostion of Riparian Vegitation:
General Observations:
Scholar Observations.
Stream Discharge Measurements
Dietares from Data at Marie O. C.
Meas. type: Price AA Pygmy Data Coll. Type: Aqua Calc Sheet Aqua Calc Transect #:

				_	Strea	am Di	scha	rge Meas	uremen	ts			
Time	Station #	Angle Coefficient	Distance (from Initial Point-ft.)	Width	Depth (ft.)	Observation Depth	Revs.	Interval Time - in seconds	Velo	Mean in Vertical	Adjusted for Hor. Angle	Section Area (ft.²)	Section Discharge (cf
	1 (EOW)		0			0	0	0		0 (			
			4		0.15						<b>.</b>		
			14		0.4						<b>_</b>		
			24		0.48								
	<u> </u>	<u> </u>	34		0.4						-	<del> </del>	<u> </u>
	ļ	↓	44 54		6.52					_			
	<u> </u>	<b> </b>	54		6.4								
		<del> </del>	64	· · · · · · · · · · · · · · · · · · ·	0.6		<del> </del>						
	<u> </u>		74 84		0.25		<u> </u>		<u> </u>	<u> </u>	_	<u> </u>	
	<u> </u>				0.35						<del>                                     </del>		
		╁	94 134		0.25						<del> </del>		
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										Calculated [		:	1
_										Aqua Calc [			
Remar	ks:												
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#### Data Sheet B - Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #:	7.0		Cita Lagatiani Daga	:							
Site Lat/Long: 0 7385	710		Site Location Description:								
Date & Time: 10/21/20			Recr Des Peres - 22								
Personnel: Nn (Co			Facility Name: Permit Number:			7					
Current Weather Cond											
Photo Ids: Upstream:		ctra	Weather Conditions for Past 7 days: Cloudy am: Other: 0//6 - 0/27								
Thoronas. Opsercant.	. DOWII	3110	zaiii.		Other: 0//6 -	0122					
Used Observed*:											
☐ Swimming	☐ Skin Diving		SCUBA diving		Tubing	☐ Water Skiing					
☐ Wind surfing	☐ Kayaking		Boating		Wading	☐ Rafting					
☐ Hunting	☐ Trapping			Ø	None of the above						
Describe: (include num	ber of individuals	reci	reating, frequency of	of	use. photo-docume	ntation of					
evidence of recreations	al uses, etc.		<b>5</b> , 1, 3		, , , , , , , , , , , , , , , , , , , ,						
Surrounding Condition	ons*: (Mark all that p	ron	note or impede recrea	ati	ional uses. Attach pho	tos of evidence or					
unusual items of interest.)					***						
☐ City/county parks	☐ Playgrounds			n	☑ Urban areas	☐ Campgrounds					
		ļ	lands								
☐ Boating accesses	☐ State parks		National forests		☐ Nature trails	☐ Stairs/walkway					
□ No trespass sign		×	Steep slopes		□ Other:						
Evidence of Human Use*:											
□ Roads	☐ Foot		☐ Dock/platform	1	☐ Livestock	□ RV/ATV Tracks					
	paths/print	S			Watering						
$\square$ Rope swings	☐ Camping Si	tes	☐ Fire pit/ring		☐ NPDES	☐ Fishing Tackle					
					Discharge						
☐ Other:											

<sup>\*</sup>Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

Stream Morphology: **Upstream View Physical Dimensions:** Max. Depth(ft) Length(ft) Ave. Depth(ft) ☐ Riffle Width(ft) Max. Depth(ft) Ave. Depth(ft) Length(ft) □ Run Width(ft) Max. Depth(ft) Ave. Depth(ft) Length(ft) ☐ Pool Width(ft) Estimated (ft<sup>3</sup>/sec): No Present? Yes □ Flow Downstream View Physical Dimensions: Max. Depth(ft) Ave. Depth(ft) Length(ft) ☐ Riffle Width(ft) Max. Depth(ft) Ave. Depth(ft) Width(ft) Length(ft) □ Run Max. Depth(ft) Ave. Depth(ft) Length(ft) ☐ Pool Width(ft) Estimated (ft<sup>3</sup>/sec): No ☐ Flow Present? Yes Substrate\*: (These values should add up to 100%) %Mud/Clay %Bedrock 95 %Cobble %Gravel %Sand %Silt Aquatic Vegetation\*: (note amount of vegetation or algal growth at the assessment site) bent hiz Water Characteristics\*: (Mark all that apply.) None Odor: ☐ Chemical Other Sewage Musky Color: 🛭 Clear 🕱 Green ☐ Gray ☐ Milky Other Bottom ☐ Sludge ☐ Solids ☐ Fine ☑ None □ Other Deposit: sediments ₩ None Surface **▼** Foam Other 💢 Scum Deposit: Comments: Please attach additional comments (including information from interviews) to this form. \*This information is not to be used solely for removal of whole body contact recreation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use. I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate. Position: ENLIRONMENTAL SPECIALIST

## **MEC Water Resources**

#### **Stream Morphology & Discharge Measurements**

Project Name/Number: <u>MSD - VAA</u>

Date/Time: <u>10/21/64</u>

Site/Transect ID Number: 22

	Start Time: /620			-					End Time: <u>/6:30</u>		
					Temp:	55°F		We	ather Cond:	Hoody	
685	-186			Stream N	lorpholo	gy Betwe	en Transe	cts			·····
0,005	-116-1	ፓ.ፓ. ୮	ength of Poo	ls		Length of Ru	n	L	ength of Riff	les	
			Start GPS						Start GPS		
	#	ft.	#	End GPS#	ft.	Start GPS #	End GPS #	ft.	#	End GPS #	
	1										
l	2										
	3										
1	4										
	5										
	6										
	7										
	8										
	9										
	10								<u> </u>		
	11										
	12										
	13										
	14										
	15							· · · · · · · · · · · · · · · · · · ·			
		,		Strea	m Morn	hology At	Transect			<u> </u>	
	I DD Ameles				_				<b>-</b> .		
	LDB Angle: _		•	RDB Angle: _		_	Secchi (ft) _		_ luri	bidity (NTU): _	<del> </del>
Channe	I Comp (%):		Cobble	15	Grave	1_5	Sand		Silt		
			Other								
Bank C	`omnostion	na d		. <del>L</del>	2./						
Dalik	omposition _	101000,	( Duca	C-7C- 1	COCK						
		• •									<del></del>
Ripariai	n Corridor Der	nsity:	Width of Ri	parian Area:_							<del>- , , , , , , , , , , , , , , , , , , ,</del>
			Compostio	n of Riparian	Vegitation						
				_							
Genera	al Observation	is: Evid	1 6	Access.	) Ce. 1	tran -	Train	Brizige	-		
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			<u>'</u>						· · · · · · · · · · · · · · · · · · ·		
						arge Meas					
Beg	jinning Stage										
	Channel Wid	dth:		Total	Area:			Avera	ge Velocity:		
	Distance from	n Datum to	Water Surfa	ice:	Start:				End:		
i	Meas. ty	pe: Price	AA Pygmy	Data Coll.	Type: Aqu	ua Calc Sheet	A	qua Calc 1	Fransect #:		

					Stre	am Dis	scha	rge Meas	urement				
Time	Station #	Je cient	Distance (from initial Point-ft.)	Width	Depth (ft.)	Observation Depth	Revs.	Time - in onds	Veloo At Point	ity (f/s)  Mean in Ver-	Adjusted for Hor. Angle	Section Area	Section Discharge (cfs
		Angle Coefficient								tical		(11.)	Discharge (cre
	1 (EOW)		0			0	0	0	0	0			
	_	1			<u> </u>								
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		$\vdash$										<del>                                     </del>	
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	1				<b>L</b>	I			Log	g Sheet Tota	als:	1	
									Sheet C	alculated Di	ischarge:		
Da	lea i								A	qua Calc D	ischarge		
Remar	KS:				15/2	******							
								·					

Site #1. Upstream View



Site #1. Downstream View



Site #2. Upstream View



Site #2. Downstream View



Site #3. Upstream View



Site #3. Downstream View



Site #4. Upstream View



Site #4. Downstream View



Site #5. Right Descending Bank View



Site #5. Downstream View



Site #6. Left Descending Bank View



Site #6. Downstream View



Site #7. Upstream View



Site #7. Right Descending Bank View



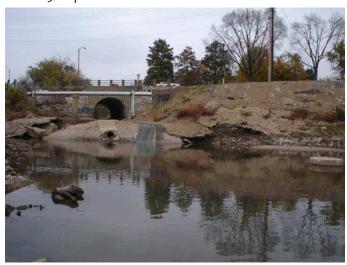
Site #8. Upstream View



Site #8. Right Descending Bank View



Site #9. Upstream View



Site #9. Downstream View



Site #10. Upstream View



Site #10. Downstream View



Site #11. Upstream View



Site #11. Downstream View



Site #12. Upstream View



Site #12. Downstream View



Site #13. Left Descending Bank View



Site #13. Downstream View



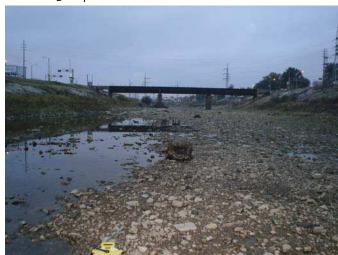
Site #14. Upstream View



Site #14. Downstream View



Site #15. Upstream View



Site #15. Downstream View



Site #16 - Photos Unavailable

Site #17. Upstream View



Site #17. Downstream View



Site #18. Upstream View



Site #18. Downstream View



Site #19. Upstream View



Site #19. Downstream View



Site #20. Upstream View



Site #20. Downstream View



Site #21. Upstream View



Site #21. Downstream View



Site #22. Upstream View



Site #22. Downstream View



## Appendix B River des Peres Lateral Transects

Site #4

Depth

(ft.)

0.00

0.72

0.70

0.60

0.40

0.23

0.23

0.10

0.05

0.00

Distance

(ft.)

0.0

1.0

5.0

9.0

13.0

17.0

21.0

25.0

28.0

29.0

Site #1				
Distance	Depth			
(ft.)	(ft.)			
0	0.00			
1	0.20			
2	0.20			
4	0.30			
6	0.35			
8	0.40			
10	0.40			
12	0.40			
14	0.50			
16	0.60			
18	0.50			
20	0.32			
22	0.32			
24	0.23			
26	0.23			
28	0.00			
49	0.00			
50	0.40			
51	1.95			
53	1.95			
55	2.05			
57	1.10			
58	0.00			
81	0.00			
82	0.30			
86	1.00			
90	1.06			
100	1.00			
110	0.62			
120	0.70			
128	0.70			
128.1	0.00			

Site	#2	Site	#3
tance	Depth	Distance	Depth
ft.)	(ft.)	(ft.)	(ft.)
0	0.00	0.0	0.00
0.5	0.55	1.0	0.05
4.5	0.70	5.0	0.20
3.5	0.75	9.0	0.71
2.5	0.80	13.0	0.75
6.5	1.05	17.0	0.80
0.5	1.10	21.0	0.80
4.5	0.90	25.0	0.72
8.5	0.60	29.0	0.38
0.5	0.30	31.0	0.15
1.5	0.00	31.5	0.00
		118.5	0.00
		120.5	0.20
		124.5	0.30
		128.5	0.46
		132.5	0.58
		136.5	0.58
		140.5	0.47
		141.5	0.45
		142.5	0.20
		143.0	0.00

Site	<del>:</del> #5	Site	: <b>#</b> 6
Distance	Depth	Distance	Depth
(ft.)	(ft.)	(ft.)	(ft.)
0.0	0.00	0.0	0.20
4.0	0.00	4.0	0.60
8.0	0.00	8.0	0.80
12.0	0.00	12.0	0.80
16.0	0.20	16.0	0.80
20.0	0.70	20.0	0.85
24.0	0.80	24.0	0.70
28.0	0.80	28.0	0.65
32.0	0.60	32.0	0.65
36.0	1.00	36.0	0.30
40.0	0.60	36.8	0.00
44.0	0.20	114.4	0.00
45.0	0.00	118.4	0.03
124.0	0.00	122.4	0.03
128	0.60	126.4	0.40
132	0.60	130.4	0.30
136	0.40	134.4	0.30
140	0.30	138.4	0.35
144	0.20	142.4	0.30
147.3	0.00	146.4	0.15
	-	147.7	0.00

Site #7

Depth

(ft.)

0.00

0.40

0.40

0.60

0.80

1.00

0.10

0.00

0.00

0.10

0.20

0.00

Distance

(ft.)

0.0

4.0

8.0

12.0 16.0

20.0

24.0

28.0

29.2

143.2

147.2

151.2

152.0

128

133

138

143 148

153

156

158

0.70

0.70

0.70 0.65

0.60

0.50

0.50

0.00

#### Appendix B River des Peres Lateral Transects

						111			_				
Site	e #8	Site	: #9	Site	#10	Site	#11	Site	#12	Site	#13	Site	#14
Distance	Depth	Distance	Depth	Distance	Depth	Distance	Depth	Distance	Depth	Distance	Depth	Distance	Depth
(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)
72.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
76.0	0.05	0.5	0.80	2.2	0.20	1.0	0.15	2.0	0.25	1.0	0.20	1.0	0.30
80.0	0.05	3.5	1.03	6.2	0.50	4.0	0.22	7.0	0.60	2.0	0.40	5.0	0.90
84.0	0.10	6.5	1.10	10.2	0.80	8.0	0.62	12.0	1.00	3.0	0.95	9.0	1.30
88.0	0.20	8.5	0.70	14.2	1.00	13.0	0.75	17.0	1.10	4.0	1.40	14.0	1.70
92.0	0.27	9.5	0.30	18.2	0.85	18.0	0.90	22.0	1.10	7.0	1.50	19.0	1.80
96.0	0.70	11.0	0.00	22.2	1.00	23.0	0.93	27.0	1.10	8.0	1.10	24.0	1.90
100.0	0.80	63.0	0.00	24.2	0.72	28.0	1.08	32.0	0.90	12.0	0.80	29.0	1.90
104.0	0.95	68.0	0.60	25.2	0.52	33.0	1.00	37.0	0.80	16.0	1.10	34.0	1.80
108.0	1.00	73.0	1.05	26.2	0.10	35.0	1.00	38.0	0.25	20.0	1.20	39.0	1.50
112.0	1.00	78.0	1.60	27.2	0.00	36.0	0.80	39.0	0.10	24.0	1.20	44.0	1.25
116.0	1.20	83.0	2.00			38.0	0.50	40.5	0.00	28.0	1.20	49.0	1.30
120.0	1.20	88.0	1.30			40.0	0.10			31.0	0.90	54.0	0.80
124.0	1.00	93.0	0.50			40.5	0.00			33.0	0.50	56.0	0.75
128.0	0.65	98.0	0.60					4		35	0.00	58	0.20
130.0	0.00	103.0	0.35									59	0.00
		108	0.25										
		113	0.20										
		118	0.30										
		123	0.20										

#### Appendix B River des Peres Lateral Transects

Site	#15	Site	#16	Site	#17	Site	#18	Site	#19	Site	#20	Site	#21
Distance	Depth	Distance	Depth	Distance	Depth	Distance	Depth	Distance	Depth	Distance	Depth	Distance	Depth
(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)
0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.15
1.0	0.35	2.0	0.30	9.0	0.10	1.0	0.70	1.5	0.60	1.0	0.20	4.0	0.40
6.0	1.00	5.0	0.40	15.0	0.20	6.0	1.15	7.5	0.70	7.0	0.50	14.0	0.48
11.0	1.00	8.0	0.62	21.0	0.20	11.0	1.00	13.5	0.60	13.0	0.40	24.0	0.40
16.0	1.00	11.0	0.50	27.0	0.50	16.0	1.05	19.5	0.90	19.0	0.40	34.0	0.52
21.0	0.80	14.0	0.45	33.0	0.55	20.0	0.40	25.5	0.60	25.0	0.30	44.0	0.40
26.0	0.75	17.0	0.42	39.0	0.62	22.0	0.10	31.5	0.65	31.0	0.40	54.0	0.60
31.0	0.70	20.0	0.42	45.0	0.88	23.0	0.00	37.5	0.90	37.0	0.10	64.0	0.40
36.0	0.60	21.0	0.30	51.0	1.20	34.0	0.00	43.5	0.80	43.0	0.30	74.0	0.25
41.0	0.50	23.0	0.00	57.0	1.00	35.0	0.20	49.5	0.60	49.0	0.50	84.0	0.25
46.0	0.20			63.0	1.10	37.0	0.23	55.5	0.90	55.0	0.40	94.0	0.25
51.0	0.20			69.0	1.35	39.0	0.20	61.5	0.70	61.0	0.80	104.0	0.40
56.0	0.10			75.0	1.15	40.0	0.00	67.5	0.70	67.0	0.40	114.0	0.40
60.0	0.00	]		81.0	0.85	46.0	0.00	69.5	0.60	73.0	0.60	122.0	0.15
		<del>-</del>		87	0.50	47	0.40	71	0.00	79	0.40	122.5	0.00
				92	0.50	52	0.60			85	0.50		
				93	0.30	57	0.65	1		91	0.50		
				95	0.00	62	0.50	1		96	0.20		
						67	0.50	1		99	0.00		
						72	0.50	1				•	
						77	0.20	1					
						82	0.30	1					

87

92

97

102

107 112

117

119

121

0.30

0.30

0.40

0.70 0.40

0.35

0.20

0.30

0.00

#### Appendix C River des Peres Water Quality Data

 ${\tt USGS\ Water\ Quality\ Data\ Collected\ at\ USGS\ o7010022\ River\ des\ Peres\ near\ University\ City}$ 

(38°40'5.72", -90°19'25.33" NAD 83)

			10 <sup>°</sup> 5.72", -90°19':	25.33 NAD 83	)	
Date/Time	Streamflow	Specific Conductivity	Fecal Coliform	E. coli	Condition	Recreation Season
(M/D/Y 24:00)	(cfs)	(uS/cm)	(col./100 mL)	(col./100 mL)	(Baseflow, Runoff)	(Yes, No)
8/19/97 13:48	75.0	219	150,000	100,000	Runoff	Yes
8/26/97 15:35	0.0	1,040	30,000	100,000	Baseflow	Yes
12/16/97 8:35		1330	25000	21000		No
2/24/98 14:30	0.05	1110	100	150	Baseflow	No
4/3/98 9:08		263	92000	60000		Yes
6/22/98 14:45	0.84	705	2400	1700	Baseflow	Yes
12/1/98 8:35	0.47	543	3100	8000	Baseflow	No
2/11/99 10:10	0.68	1320	4800	2400	Baseflow	No
2/11/99 15:16	333	323	60000	36000	Runoff	No
5/12/99 16:09	76	159	940000	510000	Runoff	Yes
6/17/99 8:50	0.11	1020	4000	1400	Baseflow	Yes
8/3/99 8:28	0.01	870	21000	2000	Baseflow	Yes
1/6/00 7:40	0.03	535	680	350	Baseflow	No
2/18/00 1:33	964	235	35000	28000	Runoff	No
2/29/00 7:56	0.06	595	350	180	Baseflow	No
5/7/00 1:21	229	343	48000	36000	Runoff	Yes
6/15/00 8:15	0.06	429	4000	1800	Baseflow	Yes
8/1/00 10:15	0.35	659	5000	3200	Baseflow	Yes
12/19/00 9:20	0.35	4410	1300	1900	Baseflow	No
2/27/01 8:20	0.81	101	4400	1700	Baseflow	No
3/15/01 20:02	190	545	6300	3500	Runoff	No
4/9/01 23:32	288	451	26000	78000	Runoff	Yes
5/29/01 13:10	0.09	706	23000	1200	Baseflow	Yes
8/27/01 11:30	0.01	887			Baseflow	Yes
10/24/01 13:22	593	73	120000	200000	Runoff	Yes
12/11/01 13:50	0.07	1000	500	47	Baseflow	No
2/4/02 10:48	1.3	1600	6600	1600	Baseflow	No
3/9/02 2:17	157	2100	56000	9500	Runoff	No
3/25/02 3:00	717	214			Runoff	No
5/30/02 9:55	0.81	780	13000	7000	Baseflow	Yes
8/8/02 14:40	0.06	627	920	120	Baseflow	Yes
10/29/02 1:56	15	369	32000	39000	Runoff	Yes
12/17/02 14:10	0.22	3360	23	4	Baseflow	No
2/4/03 15:00	0.71	2680	760	220	Baseflow	No
3/19/03 8:52	161	565	22000	16000	Runoff	No
6/9/03 11:30	0.3	1010	880	440	Baseflow	Yes
8/12/03 12:45	0.06	847	780	520	Baseflow	Yes
10/9/03 13:37	691	127	6000	2000	Runoff	Yes
12/17/03 8:35	0.91	3600	11000	2400	Baseflow	No
2/18/04 8:45	0.22	1990	1200	1600	Baseflow	No
3/3/04 20:21	65	1400	140000	41000	Runoff	No
5/18/04 9:30	0.16	1140	1900	6200	Baseflow	Yes
8/3/04 10:15	0.01	930	5000	4000	Baseflow	Yes

## Appendix C River des Peres Water Quality Data

USGS Water Quality Data Collected at USGS 07010097 River des Peres at St.Louis (38°33'33.89", -90°16'59.52" NAD 83 )

Date & Time	Streamflow	Specific Conductivity	Fecal Coliform	E. coli	Condition	Recreation Season
(M/D/Y 24:00)	(cfs)	(uS/cm)	(col./100 mL)	(col./100 mL)	(Baseflow, Runoff)	(Yes, No)
10/29/02 3:00	314	1,450	24,000	39,000	Runoff	Yes
12/17/02 11:00	2.4	1920	40	4	Baseflow	No
2/3/03 10:45	3.2	2030	20	23	Baseflow	No
3/19/03 11:09	752	744	74000	25000	Runoff	No
6/9/03 15:50	2.4	769	520	240	Baseflow	Yes
8/11/03 13:15	0.32	647	470	270	Baseflow	Yes
10/9/03 14:55	2840	275	84000	63000	Runoff	Yes
12/4/03 10:20	10	1060	710	830	Baseflow	No
2/18/04 8:50	7.4	1550	77	52	Baseflow	No
3/4/04 11:00	1010	623	190000	29000	Runoff	No
5/17/04 12:00	6.2	932	92	42	Baseflow	Yes
8/3/04 15:45	10	627	420	88	Baseflow	Yes

## Appendix D

### River des Peres Recreational Use Attainability Interview Forms



River Des Peres and Maline Creek

The purpose of th	is survey is to aid in identifying currer	nt recreational uses of	the River Des	Peres and Maline Creek.
Assessor_Trk	ent Stoper		By Person	By Phone
Date2	123/05	Time	-	
Reason for the int	erviewee selection Foundry	f Riverdes F.	eres Haac	Swater Coalition
Location: River	Des Peres Maline Creek			
Description (GPS o	ptional)			
CONTACT INFO	110 111 110 1110			
Current Address	8025 Blackberry Ave.	University City	63130	
Occupation Ex	ecutive Dir. of Green	Certer		
Age_ 52				
PERSONAL USE				
How long have you	lived near this body of water?	5 - Not conti	mous	
	nily utilize River Des Peres and Maline			or NO
	the activities and approximate numb			,
ACTIVITIES	NUMBER OF TIMES/PER PERIOD	SEASON	FL	OW CONDITION
Swimming	0			
Kayaking	0			
Tubing	0			
Rafting	0			
Boating	0			
Water Skiing	- O			
Other Clean	Ups, walk along, ice sta	ated (did not f	rece Clat-	Dout red - Pack Hill
	Recninered to that then General Aesthetics, Water Quality, Lac			

ACTIVITIES	NUMBER OF TIMES/PER PERIOD	<u>SEASON</u>	FLOW CONDITION					
Swimming	0							
Kayaking	0							
Tubing	0							
Rafting	0							
Boating	O							
Water Skiing	0							
Other Observed	children playing with	in rivera He	men Park, Clean ups					
If <b>NO</b> , reasons why (Ge Other	Same as Personal and neral Aesthetics, Water Quality, Lack	c of Depth, Weather, Sa	fety, Velocity)					
ANECTODAL USE								
<u>ACTIVITIES</u>	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION					
Swimming	\* <del>*</del>							
Kayaking	1*		Unknown					
Tubing	0							
Rafting	0							
Boating	1 **		Unknow					
Water Skiing	0							
Other Barry Ko	210ff - Used to swing int	o RdP when ch	nild - Prior to hydrologic modil Eagle Scout budges Monal					
314725-9308 If NO. reasons why	O 121-5							
Other Met	neral Aesthetics, Water Quality, Lack individual that used i Creek west of Galeria to	of Depth, Weather, Sa Deer Creek for L UMaple Wood.	cuyaking oranocing in					
Signature of Assessor A								
Signature of Interview	vee							
Date 2/2	3/05							

WITNESSED USE



River Des Peres and Maline Creek

The purpose of this survey is to aid in identifying current recreational uses of the River Des Peres and Maline Creek. Assessor Trent Stoker Interviewed by: By Person By Phone Date 3/16/05 Time Reason for the interviewee selection Co-Chair of RdP Watershed Coalition Location: River Des Peres Maline Creek Description (GPS optional) - UNSUPERVISED CHILDREN SHALL NOT BE INTERVIEWED -CONTACT INFORMATION Legal Name\_ Donald Poruce Jeffices St. Louis, MO 63109 Current Address Current Phone # Occupation Social Work Consultant Age PERSONAL USE - Characterize the personal use of the water by the surveyed individual How long have you lived near this body of water? \_\_\_\_\_ Do you or your family utilize River Des Peres and Maline Creek for water activities? or NO If YES, please check the activities and approximate number of time and the season you did. **ACTIVITIES NUMBER OF TIMES/PER PERIOD** SEASON FLOW CONDITION Swimming Kayaking Tubing Rafting Boating Water Skiing Other easons why Water quality and lack of depth. Mr. Jeffries believes that (General Aesthetics, Water Quality, Lack of Depth, Weather, Safety, Velocity)

Other RdP would be used and he would use the river if water quality and flow conditions were resolved.

WITNESSED USE -	Characterize the observed use	e of the water by the sur	veyed individual
ACTIVITIES	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
Swimming	0		
Kayaking	0		
Tubing	0		
Rafting	0		
Boating	0		
Water Skiing	0	·	
Other Childre	n playing in stream	within Universit	ty City
If <b>NO</b> , reasons why (Ge Other	n playing in Stream Same as above eneral Aesthetics, Water Quality, Lac	k of Depth, Weather, Safety, \	/elocity)
ANECTODAL USE-	Characterize the anectodal u	se of the water heard by	the surveyed individual
ACTIVITIES	NUMBER OF TIMES/PER PERIOD	<u>SEASON</u>	FLOW CONDITION
Swimming	0		
Kayaking	0		
Tubing	0		
Rafting	0		
Boating	2	Likely summer	Cikely low flow
Water Skiing	0		<i>J</i>
Other Familia	is with children pla	rying in rever.	
If <b>NO</b> , reasons why		•	Velocity)
Signature of Assessor	1+ SHL		
Signature of Interview	wed Individual		
Date 3/16/0	5		



River Des Peres and Maline Creek

Date 2/16/09	. Bacott Trent Stoper	Interviewed by:	By Person	(By Phone
Date -/ [2/03	<u></u>	Time		
Reason for the interv	iewee selection			
Location: River Des	Peres Maline Creek			
Description (GPS opti	onal)			
CONTACTINEOR	- UNSUPERVISED CHILDREN	SHALL NOT BE INTE	RVIEWED -	
CONTACT INFORM egal NameE []a	- 1 // - //			
urrent Address				
urrent Phone # 3	14-453-9555			
unent Fhone #				
ccupation <u>Reso</u>	urce Conservationis	t - St. Louis	Co Swa	CD
	14-453-9555 urce Conservation's		20 Swa	CD
ge			Co Swa	CD
PERSONAL USE				
ge ERSONAL USE ow long have you liv	ed near this body of water?	- Stream Team	na Volunte	ver 3yrs.
PERSONAL USE  Iow long have you live o you or your family	ed near this body of water?	5 - Stream Teau Creek for water activities	ng Volunte es? TES	ver 3yrs.
geERSONAL USE ow long have you liv o you or your family	ed near this body of water?	— Stream Team Creek for water activities er of time and the seaso	M Volunte es? TES on you did.	er 3yrs.  O or NO
ge	ed near this body of water?	5 – Stream Tean Creek for water activities	M Volunte es? TES on you did.	ver 3yrs.
ge	ed near this body of water?	— Stream Team Creek for water activities er of time and the seaso	M Volunte es? TES on you did.	er 3yrs.  O or NO
PERSONAL USE  Now long have you live  yo you or your family  YES, please check the	ed near this body of water?	— Stream Team Creek for water activities er of time and the seaso	M Volunte es? TES on you did.	er 3yrs.  O or NO
ge	ed near this body of water?	— Stream Team Creek for water activities er of time and the seaso	M Volunte es? TES on you did.	er 3yrs.  O or NO
ge ERSONAL USE ow long have you liv o you or your family YES, please check th  ACTIVITIES wimming ayaking ubing	ed near this body of water?	— Stream Team Creek for water activities er of time and the seaso	M Volunte es? TES on you did.	er 3yrs.  O or NO
ge	ed near this body of water?	— Stream Team Creek for water activities er of time and the seaso	M Volunte es? TES on you did.	er 3yrs.  O or NO

	NUMBER OF TIMES/PER PERIOD	<u>SEASON</u>	FLOW CONDITION
Swimming	0		
Kayaking	0		
Tubing	0		
Rafting	0		
Boating	0*		
Water Skiing	0		
Other -			
ANECTODAL USE	_		
ACTIVITIES	NUMBER OF TIMES/PER PERIOD	<u>SEASON</u>	FLOW CONDITION
Swimming	0		
Kayaking	0		
Tubing	0		
Rafting	0		
	1*		
Boating			
Boating Water Skiing	0		
Water Skiing	of 3 ladies relaxing on Rd RdP at Hemen Park bikin children@ Hemen Parks— General Aesthetics, Water Quality, Lack	Phanks in 1915	

Signature of Interviewee

Date 2/16/05

WITNESSED USE



Missouri River and Mississippi River

The purpose of this survey is to aid in identifying current recreational uses of the Missouri River and Mississippi

Assessor_TYC	+ Stoher	_ Interviewed by:	By Person	By Phone
Date 4/4/	05	Time 14:30	-,	by I none
Reason for the inte	rviewee selection River de	s Peves Linter	shed (o	alition
Location: Missou	ıri River Mississippi River			
Description (GPS op	otional)			
			w	
			***	
	- UNSUPERVISED CHILDREN	I SHALL NOT BE INTER	VIEWED -	
CONTACT INFOR	RMATION Ederick Blanton			
Current Address	1:	87. Louis MO		
Current Phone #	314-267-2829	7		
Occupation 5 in Age 42	ancial Analyst			
DEDGOMAL LIGH				
	Characterize the personal use		surveyed ir	ndividual
How long have you l	ived near this body of water?	inch 2001		
Do you or your famil		<del>ppi River</del> for water activiti	ies? YES	or <b>NO</b>
If <b>YES</b> , please check t	the activities and approximate numb	per of time and the seasor	ı you did.	
<u>ACTIVITIES</u>	NUMBER OF TIMES/PER PERIOD	SEASON	FLO	W CONDITION
Swimming	$\partial$			
Kayaking	0			
Tubing	0			
Rafting	Ö			
Boating	0			
Water Skiing				
Other				
Other  If <b>NO</b> , reasons why (Go	<u>ack of water unsate</u> eneral Aesthetics, Water Quality, Lad	E Clace to Stream ck of Depth, Weather, Safe	VC(cc; 4 ety, Velocity)	1. Perov water quali water is not access

WITNESSED USE -	- Characterize the observed use o	of the water by the	surveyed individual
ACTIVITIES	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
Swimming	0		
Kayaking	6	7. 100 · · · · · · · · · · · · · · · · · ·	
Tubing	0		
Rafting	0		
Boating	C		
Water Skiing			
Other			
If <b>NO</b> , reasons why(Ge_Other	eneral Aesthetics, Water Quality, Lack o	f Depth, Weather, Safet	cy, Velocity)
ANECTODAL USE-	Characterize the anectodal use		by the surveyed individual
ACTIVITIES Swimming	NUMBER OF TIMES/PER PERIOD	<u>SEASON</u>	FLOW CONDITION
	0		
Kayaking	U		
Tubing	$\mathcal{O}$		
Rafting	$\mathcal{O}$		
Boating	Ö		
Water Skiing	0		
Other			
If <b>NO</b> , reasons why <u>\lambda</u> (Ge Other	lost people state that Commercial Abstractics, Water Quality, Lack of	Depth, Weather, Safety	of Safe. y, Velocity)
Signature of Assessor	JA JA SAL		
Signature of Interview	ved Individual		
Date 4/4/0			



River Des Peres and Maline Creek

The purpose of this survey is to aid in identifying current recreational uses of the River Des Peres and Maline Creek. Assessor Rence Martin Interviewed by: By Person Date Reason for the interviewee selection Stream graging Stations on Piners Icreel Location: River Des Peres Maline Creek

Description (GPS optional) Bellefontaine, Pendue, Mayan Ford. - UNSUPERVISED CHILDREN SHALL NOT BE INTERVIEWED -CONTACT INFORMATION Larry Buschmann Legal Name W.R.er. Field Office Rolla - USGS Current Address 573-308-3683 Current Phone # \_\_\_\_\_ Hydrologic Tech Occupation 28 Age **PERSONAL USE** How long have you lived near this body of water? Do you or your family utilize (River Des Peres and Maline Creek for water activities? YES If YES, please check the activities and approximate number of time and the season you did. **ACTIVITIES NUMBER OF TIMES/PER PERIOD** SEASON FLOW CONDITION Swimming Kayaking Tubing Rafting Boating Water Skiing Other If **NO**, reasons why (General Aesthetics, Water Quality, Lack of Depth, Weather, Safety, Velocity) Other Wah on Roset Creek.

WITNESSED USE			
ACTIVITIES	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
Swimming	_	_	
Kayaking	-		
Tubing			
Rafting	-	_	
Boating	-		
Water Skiing			
Other	Dwg Dealing		Low
Other		or Depth, Weather, Sale	iy, velocity)
	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
ACTIVITIES Swimming	NOMBER OF TIMESIFER TERIOD	<u> </u>	
Kayaking			
Tubing	_	_	
Rafting	_	_	
Boating		_	
Water Skiing	-	_	
Other			_
Other	(General Aesthetics, Water Quality, Lack o	of Depth, Weather, Safe	ty, Velocity)
Signature of Asses	sor June Mart		
Signature of Interv			
Date ///0/	05		
	. ( 1.		

Bellefontaine Purdue Morgan Ford



River Des Peres and Maline Creek

<i>A</i>	his survey is to aid in identifying curren			ics and Mainte Ciec
Assessor ///	EL Muenks	Interviewed by:	By Person	By Phone
Date 10-0	0-04	Time	25 a.m.	
Reason for the in	terviewee selection Walking	in Wilmere	Park - bo	ades stream
	Des Peres Maline Creek			
Description (GPS	optional)			
	LINICH IDEDVICED CHILL DDEN	CHALL NOT DE IN	TED VIEWED	
CONTACT INFO		SHALL NOT BE IN	I ERVIEWED -	
	Carl Glad	Costa		
		63/19		
	(3/4)447-7002			
Occupation	eight - High School			
Age				
PERSONAL USE		_		*
How long have yo	ou lived near this body of water?	QO y pars	<b>.</b>	
	mily utilize River Des Peres and Maline	<i>y</i> -	ities? YES	or (NOD
f <b>YES</b> , please chec				
, p.oaso once	ck the activities and approximate numb	er of time and the se	ason you did.	
			•	W CONDITION
ACTIVITIES	NUMBER OF TIMES/PER PERIOD	er of time and the se <u>SEASON</u>	•	W CONDITION
ACTIVITIES Swimming			•	W CONDITION
ACTIVITIES Swimming Kayaking			•	W CONDITION
ACTIVITIES Swimming Kayaking Tubing			•	W CONDITION
ACTIVITIES Swimming Kayaking Tubing Rafting	NUMBER OF TIMES/PER PERIOD  O  O  O  O		•	W CONDITION
ACTIVITIES Swimming Kayaking Tubing Rafting Boating			•	W CONDITION
	NUMBER OF TIMES/PER PERIOD  O  O  O  O		•	W CONDITION
ACTIVITIES Swimming Kayaking Tubing Rafting Boating Water Skiing	NUMBER OF TIMES/PER PERIOD  O O O O O O O O O O O O O O O O O O	SEASON	FLO	
ACTIVITIES Swimming Kayaking Tubing Rafting Boating Water Skiing	NUMBER OF TIMES/PER PERIOD  O O O O O O O O O O O O O O O O O O	SEASON	FLO	
ACTIVITIES Swimming Kayaking Tubing Rafting Boating Water Skiing Other	NUMBER OF TIMES/PER PERIOD  O  O  O  O  O  O  O  O  O  O  O  O	SEASON	FLO	

WITNESSED USE			
<u>ACTIVITIES</u>	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
Swimming	0		
Kayaking	0		
Tubing	0		
Rafting	0		
Boating	0		
Water Skiing	0		
Other	0		
If <b>NO</b> , reasons why(G Other	Wah Guality eneral Aesthetics, Water Quality, Lack	of Depth, Weather, Safet	cy, Velocity)
ANECTODAL USE			
<u>ACTIVITIES</u>	NUMBER OF TIMES/PER PERIOD	<u>SEASON</u>	FLOW CONDITION
Swimming	0		
Kayaking	0		
Tubing	0		
Rafting	0		
Boating	0		
Water Skiing	0		
Other	0		
If <b>NO</b> , reasons why (G Other <b>S</b>	Water Quality, eneral Aesthetics, Water Quality, Lack hool teacher - never to re creation of this t	of Depth, Weather, Safet Pard of Childre YNI	cy, Velocity)
Signature of Assesso			
Signature of Intervie	wee Cro Chal		
Date 10-1	0-04		



River Des Peres and Maline Creek

The purpose of this survey is to aid in identifying current recreational uses of the River Des Peres and Maline Creek. Mulaks Interviewed by: By Phone 10-20-04 Reason for the interviewee selection In park along Stram Location: (River Des Peres Maline Creek Description (GPS optional) - UNSUPERVISED CHILDREN SHALL NOT BE INTERVIEWED -**CONTACT INFORMATION** Legal Name Current Address ... Current Phone # Occupation Age **PERSONAL USE** Do you or your family utilize River Des Peres and Maline Creek for water activities? YES If YES, please check the activities and approximate number of time and the season you did. **ACTIVITIES** NUMBER OF TIMES/PER PERIOD SEASON FLOW CONDITION Swimming Kayaking Tubing Rafting Boating Water Skiing 0 Other ()If NO, reasons why (General Aesthetics, Water Quality, Lack of Depth, Weather, Safety, Velocity)

WITNESSED USE			
<b>ACTIVITIES</b>	NUMBER OF TIMES/PER PERIOD	<u>SEASON</u>	FLOW CONDITION
Swimming	()		
Kayaking	0		
Tubing	$\bigcirc$		
Rafting	0		
Boating	0		
Water Skiing	Ö		
Other	Ö		
Other	eneral Aesthetics, Water Quality, Lack	of Depth, Weather, Safet	y, Velocity)
ANECTODAL USE			
<u>ACTIVITIES</u>	NUMBER OF TIMES/PER PERIOD	<u>SEASON</u>	FLOW CONDITION
Swimming	0		
Kayaking	0		
Tubing	0		
Rafting	0		
Boating	O		
Water Skiing	Ô		
Other	0		
If <b>NO</b> , reasons why (G Other	eneral Aesthetics, Water Quality, Lack	of Depth, Weather, Safe	zy, Velocity)
Signature of Assesso	O(C)		
Date / O O	-		



River Des Peres and Maline Creek

The purpose of this	survey is to aid in identifying curren	t recreational uses o	of the River Des Peres and Maline Creek.
Assessor /	1. 11 i	Interviewed by:	
Date $10^{-2}$		Time//_:	20 an.
Reason for the inte	rviewee selection Works	along Stre	iam (for 28 yrs)
Location: River D	es Peres Maline Creek		
Description (GPS op	ret - to west of	( routh t	Family Center) on
Weber Sh	reet - to west of	stream	
CONTACT INFOR	- UNSUPERVISED CHILDREN EMATION Conne Reke-	SHALL NOT BE IN	NTERVIEWED -
Current Address	3601 Webs Rd		
Current Phone #	314-631-0727		
Occupation 6	nonumby Center Direct	ter - Salva	Kon Army
Age	,		
PERSONAL USE		1	
How long have you l	lived near this body of water?	inked here	for 28 yrs
Do you or your fami	ly utilize River Des Peres and Maline (	Creek for water activ	vities? YES or NO
	the activities and approximate number		
ACTIVITIES	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
Swimming	0		
Kayaking	$\mathcal{C}$		
Tubing	C		
Rafting	0		
Boating	()		
Water Skiing	0		
Other	0		
If <b>NO</b> , reasons why_ (G Other_	eneral Aesthetics, Water Quality, Lack	c of Depth, Weather	r, Safety, Velocity)

Signature of Interviewee

Date 10/20/04

#### **WITNESSED USE** FLOW CONDITION **SEASON** NUMBER OF TIMES/PER PERIOD **ACTIVITIES** Swimming Kayaking 0 0 Tubing 0 Rafting Boating 0 0 Water Skiing Other If **NO**, reasons why (General Aesthetics, Water Quality, Lack of Depth, Weather, Safety, Velocity) Over 10 yrs ago withingsed this Similaring **ANECTODAL USE SEASON FLOW CONDITION** NUMBER OF TIMES/PER PERIOD **ACTIVITIES** Swimming 0 Kayaking Tubing Rafting Boating Water Skiing Other If NO, reasons why\_ (General Aesthetics, Water Quality, Lack of Depth, Weather, Safety, Velocity) Other Signature of Assessor



River Des Peres and Maline Creek

The purpose of this	survey is to aid in identifying curren	t recreational uses of	the River Des Pe	eres and Maline Creek.
Assessor /	He Micks	Interviewed by:		By Phone
Date $/C^- 2$		Time/3		
Reason for the inter	viewee selection Works	nea.	Stream	
Location: River D	es Peres Maline Creek			
Description (GPS op	tional) Salvation Arr	ny - Youth &	Family (	1 forty
to wast	of stream - Clear	- With of	honan	
			3/10/05	
	- UNSUPERVISED CHILDREN	SHALL NOT RE INT	TERVIEWED -	
CONTACT INFOR	MATION .	S. I. CE ITO I DE ITT	I EK VIL VVLD -	
Legal Name	Joris Miller			
Current Address	3601 Weber Ro			
Current Phone # (.	f			
	fice Manager			
Age				
PERSONAL USE				
How long have you!	ived near this body of water? $_{-}$	luns		
	y utilize River Des Peres and Maline (		ties? YES	or NO
	he activities and approximate numbe			
<u>ACTIVITIES</u>	NUMBER OF TIMES/PER PERIOD	SEASON	FLO	W CONDITION
Swimming	0			· · · · · · · · · · · · · · · · · · ·
Kayaking	C			
Tubing	0			
Rafting	Ô			
Boating	Ö			
Water Skiing	0			
Other	0			
If <b>NO</b> , reasons why (G Other	eneral Aesthetics, Water Quality/Lac	- lack of Co k of Depth, Weather, S	Safety, Velocity)	

WITNESSED USE			
ACTIVITIES	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
Swimming	0		
Kayaking	Ó		
Tubing	0		
Rafting	0		
Boating	Ĉ		
Water Skiing	0		
Other	Ô		
	M/A General Aesthetics, Water Quality, Lack o	f Depth, Weather, Safe	ty, Velocity)
ANECTODAL US	E		
<u>ACTIVITIES</u>	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
Swimming	0		
Kayaking	0		
Tubing	0		
Rafting	0		
Boating	C		
Water Skiing	0		
Other	Ó		
If <b>NO</b> , reasons why ( Other	M/A General Aesthetics, Water Quality, Lack o	f Depth, Weather, Safe	ety, Velocity)
Signature of Asses	A. Om	La C	
Date	10/20/04		



The purpose of this	survey is to aid in identifying curren	t recreational uses o	the River Des Peres and Mali	ine Creek.
Assessor 16	Le Muelle	Interviewed by:	By Person By Phone	
Date	20-04	Time $\sqrt{2/2}$	00 p.m.	
Reason for the inter	viewee selection Live Ou	2 Webe Ro	d along Shewen	
	es Peres Maline Creek			
	tional) Live to wes	stof stol	an - clear view	£
Skear	n			
CONTACT INFOR	- UNSUPERVISED CHILDREN MATION  105 & May Sensen  906 heber Road			_
Current Phone #				_
	red (both)			_
Age GC's	•			_
PERSONAL USE				<del></del>
How long have you l	ved near this body of water? $3\psi$	yesher	GO or mad yes in	arec
Do you or your famil	y utilize River Des Peres and Maline C	Preek for water activi	ties? YES or NO	
If <b>YES</b> , please check t	he activities and approximate numbe	er of time and the se	ason you did.	
<u>ACTIVITIES</u>	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITIO	N
Swimming	0			
Kayaking	0			
Tubing	0			
Rafting	0			
Boating	0			
Water Skiing	O			
Other photograp	ohs & walks area	, Sight Scring	purposes	
If <b>NO</b> , reasons why(G	eneral Aesthetics, Water Quality, Lack	ack of depth of Depth, Weather,	Aesthietics Safety, Velocity)	-
Other	Should plant flows or w	110 lite triendly	plants along it	_

WITNESSED USE	115/2/05		
SEE NOTE TO ACTIVITIES	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
Swimming	Some-several times	Symme	lev-mid
Kayaking	0		
Tubing	0		
Rafting	Ø		
Boating	0		
Water Skiing	0		
Other Spen S	oneous Shorting gar w	th.	
If <b>NO</b> , reasons why(Ge	neral Aesthetics, Water Quality, Lac		ty, Velocity)
ANECTODAL USE			
ACTIVITIES	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
Swimming	O		
Kayaking	O		
Tubing	0		
Rafting	0		
Boating	0		
Water Skiing	0		
Other	$\mathcal{C}$		
If <b>NO</b> , reasons why (Ge Other	M/A eneral Aesthetics, Water Quality, Lac	k of Depth, Weather, Safe	ty, Velocity)
Signature of Assessor	Mitted My		
Signature of Interview	nee Janes Jense	1	
Date	a3-04		

Follow-Up Phone Conversation - 5/2/05 - Mary Senseney by Trent Stober Swimming uses that were observed were very infrequent. These were during times that water deptus were adequate for swimming, which is not typical. Mary stated that these were typically children or youths and could not recall the approximate number of times that she has observed these uses.

Assessor: Thent AAL

Date: May 2, 2005



The purpose of this	survey is to aid in identifying curren	t recreational uses of th	e River Des Pe	res and Maline Creek.
Assessor Nat	e Mnenks	Interviewed by:	By Person	By Phone
Date /	rviewee selection pakels as	Time CO.	m.	
Reason for the inte	rviewee selection parchs ar	rea anciae	River Da	Reres
	Pes Pere Maline Creek			
Description (GPS op	otional) at Walgreen	s parking lof	to East	of Stream
	- UNSUPERVISED CHILDREN RMATION SUMM → St Lang City			
Current Address				
Current Phone #				
Occupation $P_{\mathcal{C}}$	luce office			
Age			,	
PERSONAL USE			**	
How long have you	lived near this body of water?			
	ly utilize River Des Peres and Maline (			NO.
	the activities and approximate numb			or <b>NO</b>
<u>ACTIVITIES</u>	NUMBER OF TIMES/PER PERIOD	SEASON	FLOV	/ CONDITION
Swimming	110			CONDITION
Kayaking				
Tubing				
Rafting				
Boating				
Water Skiing				
Other				
	eneral Aesthetics, Water Quality, Lac	k of Depth, Weather, Saf	ety, Velocity)	

WITNESSED USE			
ACTIVIT <u>IES</u>	NUMBER OF TIMES/PER PERIOD	<u>SEASON</u>	FLOW CONDITION
Swimming	NO		
Kayaking			
Tubing			
Rafting			
Boating			
Water Skiing			
Other Nove	seen anyone in Rive		
Other	General Aesthetics, Water Quality, Lack		ty, Velocity)
ANECTODAL US		CEACON	FLOW CONDITION
ACTIVITIES Swimming	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
Kayaking	- NO		
Tubing			
Rafting			
Boating			
Water Skiing			
Other			
If <b>NO</b> , reasons why ( Other	General Aesthetics, Water Quality, Lack		ty, Velocity)
Signature of Assess Signature of Interv Date	0.0		



Assessor / [7]	4 /1/1 . le c			
10	A Muenks	Interviewed by:	By Person	By Phone
Date/	7-04	Time $4$ $2$	Op.m.	
Reason for the int	erviewee selection Works af C	Foodwill on 1	Norgan Ford	RÍ
	Des Peres Maline Creek			
Description (GPS o	optional) (goodwill at	Morga Ford	Rand +	our of
Stran	7	-	٦,	
	lay Blake			
Current Address_	1800 Marie Ford	P		
Current Phone #	(314)631-1463			
Occupation_ <i></i>	555 fet Manyer			
Age	95			
PERSONAL USF				
How long have you	I lived near this body of water?	1 year L	orked here	SH évire
How long have you	I lived near this body of water? nily utilize River Des Peres and Maline (	yew Lo Creek for water activ	ities? YES	
How long have you Do you or your fan f <b>YES</b> , please checl	a lived near this body of water? nily utilize River Des Peres and Maline of the activities and approximate numb	Creek for water active er of time and the se	ities? YES	Stl Ectine 1 or NO
How long have you Do you or your fan f <b>YES</b> , please check ACTIVITIES	I lived near this body of water? nily utilize River Des Peres and Maline (	yew Lo Creek for water activ	ities? YES	SH évire
How long have you Do you or your fan f <b>YES</b> , please checl ACTIVITIES Swimming	a lived near this body of water? nily utilize River Des Peres and Maline of the activities and approximate numb	Creek for water active er of time and the se	ities? YES	Stl Ectine 1 or NO
How long have you  Do you or your fan  f <b>YES</b> , please checl  ACTIVITIES  Swimming  Kayaking	a lived near this body of water? nily utilize River Des Peres and Maline of the activities and approximate numb	Creek for water active er of time and the se	ities? YES	Stl Ectine 1 or NO
How long have you  Do you or your fan  f <b>YES</b> , please check  ACTIVITIES  Swimming  Gayaking  Tubing	nily utilize River Des Peres and Maline of the activities and approximate numb  NUMBER OF TIMES/PER PERIOD  C  C	Creek for water active er of time and the se	ities? YES	Stl Ectine 1 or NO
How long have you  Do you or your fan  f <b>YES</b> , please check  ACTIVITIES  Swimming  Kayaking  Tubing  Rafting	a lived near this body of water? nily utilize River Des Peres and Maline of the activities and approximate numb	Creek for water active er of time and the se	ities? YES	Stl Ectine 1 or NO
How long have you Do you or your fan f <b>YES</b> , please check  ACTIVITIES Swimming Kayaking Tubing Rafting Boating	nily utilize River Des Peres and Maline of the activities and approximate numb  NUMBER OF TIMES/PER PERIOD  C  C	Creek for water active er of time and the se	ities? YES	Stl Ectine 1 or NO
How long have you Do you or your fan f <b>YES</b> , please check  ACTIVITIES Swimming Kayaking Fubing Rafting Boating Water Skiing	nily utilize River Des Peres and Maline of the activities and approximate numb  NUMBER OF TIMES/PER PERIOD  C  C	Creek for water active er of time and the se	ities? YES	Stl Ectine 1 or NO
Do you or your fan f <b>YES</b> , please checl	nily utilize River Des Peres and Maline of the activities and approximate numb  NUMBER OF TIMES/PER PERIOD  C  C	Creek for water active er of time and the se	ities? YES	Stl Ectine 1 or NO
How long have you Do you or your fan f YES, please check  ACTIVITIES  Swimming  Kayaking  Tubing  Rafting  Boating  Water Skiing  Other	nily utilize River Des Peres and Maline of the activities and approximate numb  NUMBER OF TIMES/PER PERIOD  C  C  C  C  C  C  C  C  C  C  C  C  C	Creek for water active er of time and the se	ities? YES eason you did.  FLO	SHE ELLING or NO
How long have you Do you or your fan f <b>YES</b> , please check  ACTIVITIES  Swimming  Kayaking  Tubing  Rafting  Boating  Water Skiing  Other	nily utilize River Des Peres and Maline of the activities and approximate numb  NUMBER OF TIMES/PER PERIOD  C  C	Creek for water active er of time and the se	ities? YES eason you did.  FLO	SHE ELLING or NO

<b>ACTIVITIES</b>	NUMBER OF TIMES/PER PERIOD	<u>SEASON</u>	FLOW CONDITION
Swimming	C		
Kayaking	C		
Tubing	0		
Rafting	0		
Boating	0		
Water Skiing	0		
Other	0		
Other	General Aesthetics, Water Quanty, Lack o		ty, Velocity)
ANECTODAL US		SEASON	FLOW CONDITION
ACTIVITIES_ Swimming	NUMBER OF TIMES/PER PERIOD	SEASON	TEOW CONDITION
	<u> </u>		
 Kayaking			
	0		
Tubing	<i>O O O</i>		
Tubing Rafting			
Tubing Rafting Boating			
Kayaking Tubing Rafting Boating Water Skiing Other			



The purpose of the	is survey is to aid in identifying curren	t recreational uses of th	e River Des Pe	res and Maline Creek.
Assessor /	He Muenks	Interviewed by:		By Phone
Date		Time 4: 45	p.m	•
Reason for the into	erviewee selection Lives Co	· Street pura	Helin Ri-	V.
Location: River		,	J	
Description (GPS o	ptional) Primm Street	+ , to west	of stream	
	TIMELINED VICED CHILDREN			
CONTACT INFO Legal Name	- UNSUPERVISED CHILDREN RMATION Charlene Wozniak 3828 Prima			
Current Address	3828 Prima S	street		***
Current Phone #	NA			
Occupation	Tuse Life			
PERSONAL USE		• //		
How long have you	lived near this body of water?	18 yrs.		
	ily utilize River Des Peres and Maline C			or NO
If <b>YES</b> , please check	the activities and approximate number	er of time and the seasor	ı you did.	
ACTIVITIES	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW	CONDITION
Swimming	$\mathcal{O}$			
Kayaking	0			
Tubing	0			
Rafting	Ĉ			
Boating				
Water Skiing	0			
Other				
If <b>NO</b> , reasons why_ (0	General Aesthetics, Water Quality, Lack	of Depth, Weather, Safe	ety, Velocity)	· · · · · · · · · · · · · · · · · · ·
Other	theys, but now it			

WITNESSED USE			
ACTIVITIES	NUMBER OF TIMES/PER PERIOD	<u>SEASON</u>	FLOW CONDITION
Swimming	0		
Kayaking	C		
Tubing	0		
Rafting	C		
Boating	0		
Water Skiing	C C		
Other	$\mathcal{C}$		
other	General Aesthetics, Water Quality, Lack of	f Depth, Weather, Safe	ty, Velocity)
	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
ACTIVITIES Swimming	NOMBER OF TIMES/FER FERIOD	<u> 3EASON</u>	<u> </u>
Kayaking	C		
Tubing	C'		
Rafting	C		
Boating	0		
Water Skiing	0		
Other Kils	Fishin -18 years ago	3	
If <b>NO</b> , reasons why	,		ty, Velocity)
Signature of Assess	or New Market		
Signature of Intervi	ewee (farfane Wozn	il .	
Date $10-2$	0-04		



_	survey is to aid in identifying current	recreational uses of the R	iver Des Peres and Maline Creek.
Assessor / i	( ) v		Person By Phone
	20-04	Time 4:55	). M
Reason for the inte	rviewee selection Lives ga	Stroot adja	cont to River
Location: River D	es Peres Maline Creek	, and the second	
Description (GPS or	otional) to west of s	tream,	
			<b>V</b>
	LINICI IDEDVISED CLIII DDENI	CUALL MOT DE INITEDV	TEMED
CONTACT INFOR	- UNSUPERVISED CHILDREN :	SHALL NOT BE INTERV	IEWED -
Legal Name	Nancy Ferrell		
Current Address	3804 Prima		
Current Phone #	314)608-9374		
Occupation $R_1$	1 b 4		
Age GC			
PERSONAL USE			
How long have you	lived near this body of water?	25 yrs	
23 your runn	ly utilize River Des Peres and Maline C	Freek for water activities?	YES or NO
	ly utilize River Des Peres and Maline C		
If <b>YES</b> , please check	ly utilize River Des Peres and Maline C the activities and approximate numbe	er of time and the season y	ou did.
If <b>YES</b> , please check <u>ACTIVITIES</u>	ly utilize River Des Peres and Maline C the activities and approximate numbe	er of time and the season y	ou did.
If <b>YES</b> , please check  ACTIVITIES  Swimming	ly utilize River Des Peres and Maline C the activities and approximate numbe	er of time and the season y	ou did.
If <b>YES</b> , please check  ACTIVITIES  Swimming  Kayaking	ly utilize River Des Peres and Maline C the activities and approximate numbe	er of time and the season y	ou did.
If <b>YES</b> , please check  ACTIVITIES  Swimming  Kayaking  Tubing	ly utilize River Des Peres and Maline C the activities and approximate numbe	er of time and the season y	ou did.
If <b>YES</b> , please check  ACTIVITIES  Swimming  Kayaking  Tubing  Rafting	ly utilize River Des Peres and Maline C the activities and approximate numbe	er of time and the season y	ou did.
If <b>YES</b> , please check  ACTIVITIES  Swimming  Kayaking  Tubing  Rafting  Boating	ly utilize River Des Peres and Maline C the activities and approximate numbe	er of time and the season y	ou did.
If YES, please check  ACTIVITIES  Swimming  Kayaking  Tubing  Rafting  Boating  Water Skiing  Other	ly utilize River Des Peres and Maline C the activities and approximate numbe	er of time and the season y	ou did.
If YES, please check  ACTIVITIES  Swimming  Kayaking  Tubing  Rafting  Boating  Water Skiing  Other	NUMBER OF TIMES/PER PERIOD  C  C  C  C  C  C	SEASON	FLOW CONDITION
If YES, please check  ACTIVITIES  Swimming  Kayaking  Tubing  Rafting  Boating  Water Skiing  Other	ly utilize River Des Peres and Maline C the activities and approximate numbe	SEASON	FLOW CONDITION

WITNESSED USE			
ACTIVITIES	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
Swimming	0		
Kayaking	C		
Tubing	0		
Rafting	0		
Boating	$\circ$		
Water Skiing	\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\		
Other	0		
	eneral Aesthetics, Water Quality, Lack	of Depth, Weather, Safety, V	elocity)
		SEASON	FLOW CONDITION
ACTIVITIES Swimming	NUMBER OF TIMES/PER PERIOD	<u> </u>	TEOW CONDITION
Kayaking		W. S. C. C. C. C. C. C. C. C. C. C. C. C. C.	
Tubing	0		
Rafting	0		
Boating	10 Rem boxt	Summer '93	B flower
Water Skiing	0		
Other	Q Convin 18	Portout in 93 +	1600
If <b>NO</b> , reasons why_ (G Other_	eneral Aesthetics, Water Quality, Lack	<b>y</b>	
Signature of Assessor	ewee Maney Fore	ell.	
Date / / O	XU-UT		



River Des Peres and Maline Creek

The Science of Water Quality The purpose of this survey is to aid in identifying current recreational uses of the River Des Peres and Maline Creek. Assessor Interviewed by: By Person By Phone Time Reason for the interviewee selection Lives along Location: River Des Peres Maline Creek to East of Description (GPS optional) - UNSUPERVISED CHILDREN SHALL NOT BE INTERVIEWED -CONTACT INFORMATION Legal Name\_\_\_\_ Germania Street Current Address Current Phone # (3)4 Occupation Age **PERSONAL USE** How long have you lived near this body of water? \_\_\_\_ Do you or your family utilize River Des Peres and Maline Creek for water activities? YES NO or If YES, please check the activities and approximate number of time and the season you did. **ACTIVITIES NUMBER OF TIMES/PER PERIOD SEASON FLOW CONDITION** Swimming Kayaking Tubing Rafting Boating Water Skiing Other (General Aesthetics, Water Quality, Lack of Depth, Weather, Safety, Velocity) If NO, reasons why Other

Swimming  Kayaking  Tubing  Rafting  Boating  Water Skiing  Other  Other  (General Acoustic Acoustic Acou	ER OF TIMES/PER PERIOD  C  C  C  C  C  C  C  C  C  C  C  C  C	of Depth, Weather, Safe	FLOW CONDITION  FLOW CONDITION
Swimming Kayaking Tubing Rafting Boating Water Skiing Other  If NO, reasons why  General Activities ANECTODAL USE  ACTIVITIES Swimming Kayaking Tubing	C C C - 70's flood(73) ed knowl esthetics, Water Quality, Lack of	of Depth, Weather, Safe	
Tubing  Rafting  Boating  Water Skiing  Other  If NO, reasons why  General Activities  ACTIVITIES  Swimming  Kayaking  Tubing	sthetics, Water Quality, Lack o	of Depth, Weather, Safe	
Rafting Boating Water Skiing Other  Other  (General Activities NUMB Swimming Kayaking Tubing	sthetics, Water Quality, Lack o	of Depth, Weather, Safe	
Boating Water Skiing Other  If NO, reasons why  General Activities  ACTIVITIES  Swimming  Kayaking  Tubing	sthetics, Water Quality, Lack o	of Depth, Weather, Safe	
Water Skiing Other  Other  (General Activities NUMB Swimming Kayaking Tubing	sthetics, Water Quality, Lack o	of Depth, Weather, Safe	
Other  Other  If NO, reasons why  General Activities  Swimming  Kayaking  Tubing	sthetics, Water Quality, Lack o	of Depth, Weather, Safe	
If <b>NO</b> , reasons why(General Activities NUMB Swimming Kayaking Tubing	sthetics, Water Quality, Lack o	of Depth, Weather, Safe	
If <b>NO</b> , reasons why(General Activities NUMB Swimming Kayaking Tubing	sthetics, Water Quality, Lack o		
ACTIVITIES NUMB Swimming Kayaking Tubing	ER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
Swimming Kayaking Tubing	C C	<u> 50/15011,</u>	
Tubing			
	O		
Rafting	0		
	0		
Boating	0		
Water Skiing	0		
Other	$\bigcirc$		
If NO, reasons why  (General A  Other  Signature of Assessor	esthetics, Water Quality, Lack	of Depth, Weather, Safe	ety, Velocity)
Signature of interviewee //	ma closet		



River Des Peres and Maline Creek

The purpose of this syrvey is to aid in identifying current recreational uses of the River Des Peres and Maline Creek. Interviewed by: By Person By Phone Date Reason for the interviewee selection Lives aciquet Location: River Des Peres Maline Creek East of stream - can see strenderly Description (GPS optional) - UNSUPERVISED CHILDREN SHALL NOT BE INTERVIEWED -CONTACT INFORMATION Gash Legal Name Kalph (16-manic Current Address Current Phone # (3/4)351 - 2796 Occupation Age **PERSONAL USE** How long have you lived near this body of water? 35 yes Do you or your family utilize River Des Peres and Maline Creek for water activities? YES NO or If YES, please check the activities and approximate number of time and the season you did. **ACTIVITIES** NUMBER OF TIMES/PER PERIOD SEASON **FLOW CONDITION** Swimming Kayaking Tubing Rafting Boating Water Skiing Other If **NO**, reasons why (General Aesthetics, Water Quality, Lack of Depth, Weather, Safety, Velocity)

WITNESSED USE			
<b>ACTIVITIES</b>	NUMBER OF TIMES/PER PERIOD	<u>SEASON</u>	FLOW CONDITION
Swimming			
Kayaking			
Tubing			
Rafting			
Boating	2 on boats ( flooded) 739	3 Spring/some	flooded
Water Skiing	1 1 1 7 3	, ,	flooded
Other Riski			
If <b>NO</b> , reasons why_(	General Aesthetics, Water Quality, Lack	c of Depth, Weather, Safety	y, Velocity)
ANECTODAL US	E		
<u>ACTIVITIES</u>	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
Swimming	C		
Kayaking	$\mathcal{O}$		
Tubing	0		
Rafting	0		
Boating	Ö		
Water Skiing	C		
Other	O		
If <b>NO</b> , reasons why ( Other	General Aesthetics, Water Quality, Lac	k of Depth, Weather, Safet	y, Velocity)
Signature of Assess	sor Mill		
Signature of Interv	riewee Salat Kilca		
Date // - S		•	



River Des Peres and Maline Creek

The Science of Water Quality

/ /	, , ,		i the kiver bes P	eres and Maline Creek.
Assessor / At	E Much 5	Interviewed by:	By Person	By Phone
	20-04	Time	7 p.m.	
Reason for the inter	viewee selection Live a	djacent		****
Location: River D		•		
Description (GPS op	ctional) to East of sl	tream - Can	See Stre	ean clearly
	- UNSUPERVISED CHILDREN	SHALL NOT BE IN	TERVIEWED -	-
CONTACT INFO	MATION			
	Let Shaffer .			)
Current Address	• • • • • • • • • • • • • • • • • • • •			
	314 152 55701			
651	Tal Manage			
Age 54			The second secon	
PERSONAL USE				
How long have you		-2	>	
	lived near this body of water?	VU VVS		· · · · · · · · · · · · · · · · · · ·
	lived near this body of water? ly utilize River Des Peres and Maline	,		or (O)
Do you or your fami		Creek for water activ	vities? YES	or (O)
Do you or your fami	ly utilize River Des Peres and Maline	Creek for water activ	vities? YES eason you did.	or (O)
Do you or your fami If <b>YES</b> , please check	ly utilize River Des Peres and Maline the activities and approximate numb	Creek for water activer of time and the se	vities? YES eason you did.	
Do you or your fami If <b>YES</b> , please check  ACTIVITIES	ly utilize River Des Peres and Maline the activities and approximate numb	Creek for water activer of time and the se	vities? YES eason you did.	
Do you or your fami If <b>YES</b> , please check <u>ACTIVITIES</u> Swimming	ly utilize River Des Peres and Maline the activities and approximate numb	Creek for water activer of time and the se	vities? YES eason you did.	
Do you or your familif <b>YES</b> , please check  ACTIVITIES  Swimming  Kayaking	ly utilize River Des Peres and Maline the activities and approximate numb	Creek for water activer of time and the se	vities? YES eason you did.	
Do you or your fami If <b>YES</b> , please check  ACTIVITIES  Swimming  Kayaking  Tubing	ly utilize River Des Peres and Maline the activities and approximate numb	Creek for water activer of time and the se	vities? YES eason you did.	
Do you or your familif YES, please check  ACTIVITIES Swimming Kayaking Tubing Rafting	ly utilize River Des Peres and Maline the activities and approximate numb	Creek for water activer of time and the se	vities? YES eason you did.	
Do you or your familif YES, please check  ACTIVITIES Swimming Kayaking Tubing Rafting Boating	ly utilize River Des Peres and Maline the activities and approximate numb	Creek for water activer of time and the se	vities? YES eason you did.	
Do you or your fami If YES, please check  ACTIVITIES Swimming Kayaking Tubing Rafting Boating Water Skiing Other	ly utilize River Des Peres and Maline the activities and approximate numb	Creek for water activer of time and the se	vities? YES eason you did.	DW CONDITION

Suggestion - maintain higher Pevel, Flow - for blantification

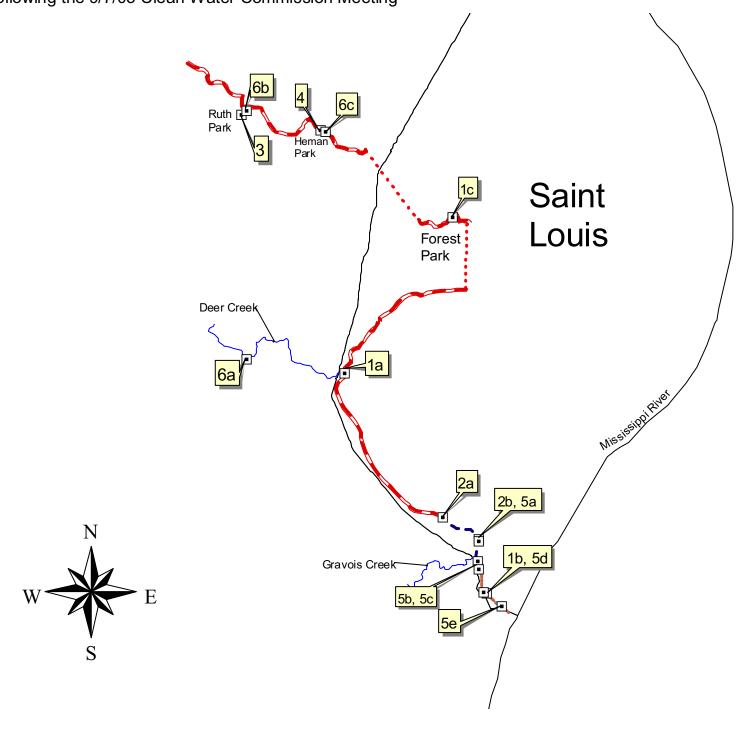
WITNESSED USE			
<b>ACTIVITIES</b>	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
Swimming	0		
Kayaking	Ö		
Tubing	C		
Rafting	C		
Boating	Ž.		
Water Skiing	O		
Other 4-L	heelin', 4x4 vehicles		- landlen
Other	General Aesthetics, Water Quality, Lack o		ty, Velocity)
ANECTODAL US		<u>SEASON</u>	FLOW CONDITION
ACTIVITIES Swimming	NUMBER OF TIMES/PER PERIOD	SEASON	TEOW CONDITION
Kayaking			
Tubing			
Rafting			
Boating			
Water Skiing	0		
Other			
OtherSignature of Asses	sorArt Safaff	of Depth, Weather, Safe	ety, Velocity)
Date 10-2	0-04		



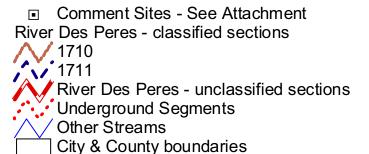
The purpose of this su	urvey is to aid in identifying current	t recreational uses of	the River Des Pe	res and Maline Creek.
Assessor Carssia	dy Enebbeiling	Interviewed by:	By Person	By Phone
, ,	0.07	Time/3/55		
Reason for the interv	iewee selection in stream	W		
	Peres Maline Creek			,
Description (GPS opti	ional) Downstream s	ection of 1	RDP, appro	x imately
300 yds. fr	on ims river			
	- UNSUPERVISED CHILDREN	SHALL NOT BE IN	TERVIEWED -	
CONTACT INFORM	MATION Bettorf	Ronnie Lo	we	
Current Address				
Current Phone #	314 534-1030			
Occupation Dov	id Mason Assoc.	- surve	yors	
Age				
PERSONAL USE				
How long have you li	ved near this body of water?			
Do you or your family	y utilize River Des Peres and Maline	Creek for water activ	ities? YES	or NO
If <b>YES</b> , please check the	ne activities and approximate numb	per of time and the se	ason you did.	
<u>ACTIVITIES</u>	NUMBER OF TIMES/PER PERIOD	SEASON	FLO	W CONDITION
Swimming	0			
Kayaking	0			
Tubing	0			
Rafting	0			
Boating	0			
Water Skiing				
Other Surv	eyi'ng			
If <b>NO</b> reasons why	,,	ck of Depth, Weather	, Safety, Velocity	)
Other				

WITNESSED USE			
ACTIVITIES_	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
Swimming			
Kayaking	2		
Tubing			
Rafting	0		
Boating			
Water Skiing	0		
Other			
Other	(General Aesthetics, Water Quality, Lack o	f Depth, Weather, Safe	ty, Velocity)
		SEASON	FLOW CONDITION
<u>ACTIVITIES</u> Swimming	NUMBER OF TIMES/PER PERIOD	SEASON	FLOW CONDITION
Kayaking	7		
Tubing			
Rafting	0		
Boating			
Water Skiing			
Other	1.7		
If <b>NO</b> , reasons why ( Other	(General Aesthetics, Water Quality, Lack o	f Depth, Weather, Safe	ty, Velocity)
Signature of Assess	sor Constitution		
Date 10/a	<b>★</b>		

River des Peres / Whole Body Contact Issue: Sites specifically identified in comment letters following the 9/7/05 Clean Water Commission Meeting







		COMMENTS CITED ON 12/16/05 MAP entitled,
		"River des Peres/ Whole Body Contact Recreation Issue"
Site 1	John Gory	Comment  a&b) I have canoed in River des Peres from the confluence of Deer Creek to past South Broadwayright before the locks area (concrete gates that go to the Mississippi River). a) I swam at the Deer Creek/River des Peres confluence about every other day as a child in the 1970's and early 1980's. c.) I took an accidental swim in River des Peres in Forest Park about 5 to 8 years ago.
2	Joe Light	a) I paddled in the River des Peres in July 2000. The trip took place between Morganford Ave and Interstate 55. (He provided a picture of himself in the river.) When canoeing a river, you come in full contact with the water of the river. If the River des Peres was cleaner, I would paddle it more often. b) The City of St. Louis has built a network of paved pedestrian walkways along the river, which will increase people's exposure.
3	Leslie Lihou	I have been wading in the headwaters of the River des Peres performing water quality monitoring, mapping the stream, and removing honeysuckle from the streambank of Ruth Park woods in University City. We are preparing the woods to be an outdoor education ecosystem for the Green Center. During our activities water splashed occasionally into our faces and people stumbled in the water. Adults and children probably will access and contact the stream in the future. Therefore the stream meets criteria for "whole body contact".
4	Laura Newman-Howe	She lives near Heman Park in University City, which she has seen kids playing in the water of the River des Peres where the banks are steep numerous times. She has also seen kids wading at the low water pass that is between the tennis courts and central ball fields (east of pool) in the center of Heman Park. See letter for more details.
5	Dan Sherburne	The letter provides evidence showing that the depth criteria are satisfied at several points along the River des Peres. Measurements were taken on October 29, 2005, following a week without any rain. The month had had a total of 0.25" precipitation to date.  a) I-55 bridge to Union Pacific RR bridge – depth measurements from 0.5-0.7 meters; b) RR bridge to Lemay Ferry Rd/ Alabama Ave bridge – max depth greater than 1.05 meter; c) just south of Lemay Ferry – 0.5-0.7 meters; d) just north of Broadway bridge – 0.5-0.8 meter; e) at lowest 200 meters, river has larger flow that clearly meets criterion. Fisherman with dog noted on south bank on October 28, 2005.
6	David Wilson	Photos provided. See letter for additional details and actual measurements taken.  a) He and his wife visit Deer Creek behind the bi-state bus depot at Brentwood and Marshall, which has a hole where swimming probably occurred many years ago.  b & c) Trails go down to the creek on the SE side. In University City, they have hike from Ruth Park to Heman Park and wade in the River des Peres. His kids have also waded and splashed in Courtois Creek in Crawford County.

First Name	Last Name	WB Name	WBID#	outlinery of comments	Date Rec'd	Date Postmarked
Diane	Albright	River des Peres	1710 & 1711	She requests that the September 7, 2005, decision be reconsidered. The new state water quality rules apply to these three water bodies, too. It is a matter of public health.	01-Dec-05	25-Dec-05
John	Gorry	River des Peres	1710 & 1711	I have canoed in River des Peres from the confluence of Deer Creek to past South Broadwayright before the locks area (concrete gates that go to the Mississippi River). I swam at the Deer Creek/River des Peres confluence about every other day as a child in the 1970's and early 1980's. I took an accidental swim in River des Peres in Forest Park about 5 to 8 years ago.	27-Oct-05	Phone call
Dr. Heinrich	Heissinger	River des Peres	1710 & 1711	We should clean up our rivers, like the Rhine River in Europe, and keep them clean. Sooner or later we will be forced to do so anyhow out of concern for the health of our population. The longer we wait, the more difficult and costly it will be.	29-Oct-05	e-mail
Joe	Light	River des Peres	1710 & 1711	I paddled in the River des Peres in July 2000. The trip took place between Morganford Ave and Interstate 55. (He provided a picture of himself in the river.) When canoeing a river, you come in full contact with the water of the river. If the River des Peres was cleaner, I would paddle it more often. The City of St. Louis has built a network of paved pedestrian walkways along the river, which will increase people's exposure.	20-Sep-05; 07-Nov-05	e-mail; 05-Nov-05
	r cyndra			I have been wading in the headwaters of the River des Peres performing water quality monitoring, mapping the stream, and removing honeysuckle from the streambank of Ruth Park woods in University City. We are		
Leslie	Lihou	River des Peres	1710 & 1711	preparing the woods to be an outdoor education ecosystem for the Green Center. During our activities water splashed occasionally into our faces	16-Sep-05	e-mail
				and people stumbled in the water. Adults and children probably will access and contact the stream in the future. Therefore the stream meets criteria for "whole body contact".		
John	Lodderhose	River des Peres	1710 & 1711	The interviews reported in the UAA were misrepresented. Very few interviewed individuals reported observing any recreational uses within the classified stream segments. These observations were very infrequent, separated by many years. MSD requests the removal of WBC use due the lack of existing WBC uses and presence of low flow conditions that prevent WBC use attainment. See letter for more details.	23-Aug-05	N/A

First Name	Last Name	WB Name	WBID#	Summary of Comments	Date Rec'd	Date Postmarked
Julie	Marino	River des Peres	1710 & 1711	We are Citizens Against River Exemption (CARE), a group of Missourians that fights for the sanitation of our rivers. We are troubled by the decision of the Clean Water Commission to exempt one hundred forty-two rivers from the new water quality rules. Incorporating all rivers under the Clean Water Act's updated water quality rules will prevent civilians from experiencing preventable illnesses.	21-Nov-05	19-Nov-05
John	Meyer, M.D.	River des Peres	1710 & 1711	Favors maintaining the highest water standards for all our rivers, creeks, and watersheds. The Mississippi River, River des Peres, Maline Creek and Coon Creek are most important to maintain for recreation because they are close to major population centers.	27-Nov-05	e-mail
Laura	Neuman- Howe	River des Peres	1712 & 1711	She lives near Heman Park in University City, which she has seen kids playing in the water of the River des Peres where the banks are steep numerous times. She has also seen kids wading at the low water pass that is between the tennis courts and central ball fields (east of pool) in the center of Heman Park. See letter for more details.	23-Nov-05	21-Nov-05
Nathan	Pate	River des Peres	1710 & 1711	River des Peres runs through suburban/urban areas where many children live. I also know that children will play in any water body accessible on foot. This stream needs to be safe for them to play in.	30-Oct-05	e-mail
William	Reeves	River des Peres	1711 & 1711	Nothing in the UAA or the report on the Commission's findings demonstrates that the hydrologic modifications cannot be operated in such as way as to make the use attainable. Until this demonstration is made, the Commission must reverse its conclusions and retain WBC for all of the River des Peres.	14-Nov-05	e-mail
		Hi ot con	4.43444	The letter provides evidence showing that in fact the depth criteria are		
Dan	satisfied at several points along the River des Peres and that the		28-Nov-05	e-mail		
				She requests that the Septe one 7, 2006, delister he mount wound. The new state water quality rules apply to these three water bodies, too. It is a matter of public health. I have canced in Miver has hears from his confruence of Deer Creek to		

First Name	Last Name	WB Name	WBID #		Date Rec'd	Date Postmarked
				Two major factors limit beneficial use of the River des Peres and its Deer Creek tributary: (1) many section of channel have steep banks and carry high flows of stormwater runoff, making them physically unattractive and hazardous to access and (2) the water in the lower reaches of the River		
Carl Ted	Stude	River des Peres	1710 & 1711	des Peres system is grossly contaminated by overflows from CSOs during wet weather. Fences off areas discourage access, but is deteriorated and may be used by people to access the river. Overflows occur during relatively light rainfalls. There is practically no flow during dry weather, and the few pools that exist have debris (from trash and CSOs). I have only seem people in the channel a few timesand those involved children who	25-Aug-05	e-mail
				were "exploring" the lower reach of channel when it had only a trickle of water in it.	ng beggi like	
David	Wilson	River des Peres	1710 & 1711	He and his wife visit Deer Creek behind the bi-state bus depot at Brentwood and Marshall, which has a hole where swimming probably occurred many years ago. Trails go down to the creek on the SE side. In University City, they have hike from Ruth Park to Heman Park and wade in the River des Peres. His kids have also waded and splashed in Courtois Creek in Crawford County.	03-Nov-05	e-mail

First Name	Last Name	Address	City	State	Zip	Phone	Email
Diane	Albright	8835 Glenwood Dr.	Chesterwood	МО	63126	N/A	N/A
John	Gorry	N/A	Pacific	МО	N/A	(636) 257-8371	N/A
Dr. Heinrich	Heissinger	618 Dougherty View Ct	Des Peres	MO	63131- 2214	(314) 821-5270	heihk75@hotmail.com
Joe	Light	7026 Sutherland Ave	St. Louis	МО	63109	(314) 644-7071	mocaver@yahoo.com; Joe@JoeLight.com
Leslie	Lihou	7008 Amherst Ave.	St. Louis	МО	63130	N/A	leslielihou@brick.net
John	Lodderhose	10 East Grand Ave.	St. Louis	МО	63147- 2913	(314) 436-8710	N/A

First Name	Last Name	Address	City	State	Zip	Phone	Email
Julie	Marino	11141 Glacier Drive	St. Louis	МО	63146	N/A	N/A
John	Meyer, M.D.	N/A	N/A	N/A	N/A	N/A	jjsmlem@aol.com
Laura	Neuman- Howe	1140 E. Parkedge Lane	University City	МО	63110	N/A	a728laura@hotmail.com
Nathan	Pate	N/A	Ellisville	MO	N/A	N/A	jknp@sbcglobal.net
William	Reeves	238 West Glendale Road	Webster Groves	МО	63119	N/A	wr_reeves@yahoo.com
Dan	Sherburne	6267 Delmar Blvd., Ste. 2E	St. Louis	МО	63130	(314) 727-0600	dsherburne@moenviron.com; dsherburne@mindspring.com

First Name	Last Name	Address	City	State	Zip	Phone	Email
Carl Ted	Stude	1252 Takara Court	Town & Country	МО	63131	N/A	studemt@sbcglobal.net
		6267 Delinas Blind , Bita.					
David	Wilson	450 West Jackson Road	St. Louis		63119	N/A	david.wilson@ewgateway.org
David	VVIISOIT	450 West Jackson Hoad	Ot. Louis	·	00113		david.wiloon & owgatoway.org
						\$6.A	
							ismem Paricom
		11141 Gaeler Drive	St Lous '				